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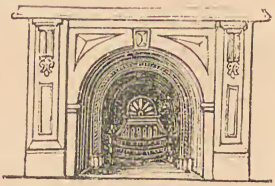

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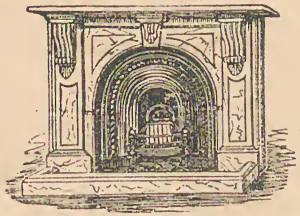

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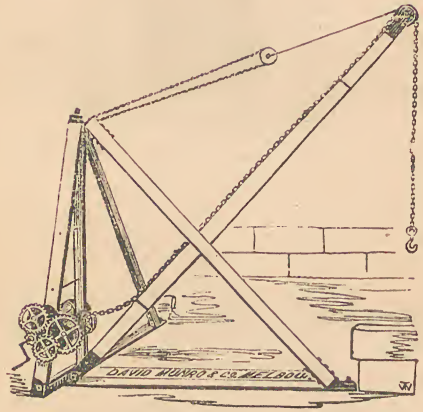

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As the cost of Labour depends mainly on the wages per hour a corresponding addition or deduction must be made when the prices are required at other than the stated rates.

The following Items are reckoned at one shilling per hour, viz. :—Boring, Tunnelling, *Quarrying*, Sawing and Polishing. Cost of Sleepers, Splitting and Fencing.

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Quarrying.—(Oct. 77). The present wages of Quarrymen in Sydney are 1s. 3d. per hour, this in conjunction with the increased value of the quarry has caused a rise of from 25 to 40 per cent. in the price of the stone as given under the head of Quarrying, &c., pages 19, 23, and 24.

The prices of the Granite shafts on page 32 are given at per lineal foot.

Errata.

Bidders' Tables for Earthwork.—Explanation at the commencement of the fifth paragraph read, "At the Intersection of the columns 5 and 0," &c.

Referring to the heights at bottom and left side of Tables.

At the junction of heights 27 and 23 upper line read 1531.
Ditto ,, 31 and 16 lower line read 57.5.
Ditto ,, 16 and 11 upper line read 451.

Stone Cutting p. 25 for Boastered or dweft and dab read Boastered or draft and dab.

Stone Carving p. 33 for 9 inch Cantilevers in Sydney stone read 7s. 0d.

Tables of Scantling pages 49 to 52 leave out the words "exclusive of sawing."

Page 60 for 7 x $3\frac{1}{2}$ read 7 by 3 and for 7 by 3 read 7 by $3\frac{1}{2}$.

Page 132, second column read Metals lbs. per cubic foot see page 155.

Printed by Moss & Doust, Machine Printers, Newtown, Sydney.

PREFACE.

The previous edition of this Work having been out of print about 6 years and the book being continually asked for both in Victoria and N. S. Wales I am induced to offer a new edition at current rates of wages based upon the time or Constants given in the previous editions, with the present prices of materials, as near as can be ascertained. The prices will therefore be cost prices at the Wages per hour stated in each Trade. Knowing the price or rate per hour at which the different Items under *Labour only* are calculated it will be easy to ascertain the price or cost at any other rate.

With the view of affording facility to Builders and Contractors to record the result of their sometimes dearly bought experience as to the cost of Work under various circumstances. I have inserted 21 blank pages for Notes and Memoranda, relating to Building, or the construction of Engineering Works, and in order that such notes should be of the utmost value for future reference, I may here state the principles regulating or governing the cost of work, viz.

1. The net or prime cost of the materials delivered on the work.

2. The waste that occurs in their conversion or manufacture.

3. The manual, animal or machine power required, in such conversion or manufacture known as *Labour only*.

4. The *Incidental expenses* such as Gantry or Scaffolding, machines, tools, workshops, superintendance by Self or Others. Loss of time by bad weather floods or drought, Strikes or unexpected demands of workmen. Accidents on the works, Risk from Fire &c.

5. Profit and Interest on outlay.

The two last Items may add from 10 to 100 per cent to the cost price of the Work and in some cases cannot be previously ascertained even by the most experienced Contractors.

The value of a Price Book is generally admitted although some pretend to discard it, or at least undervalue its use because it is not infallible in its prices or information. Its use is merely as a guide or check upon each Contractor's own prices and should rarely be depended upon for large Items without due investigation on the principles I have already laid down. As fixed prices with similar profit adapted to all circumstances are impossibilities, I have given the cost prices under favorable circumstances, as the only useful prices, leaving the Contractor to add what he considers a air allowance for Incidental expenses and profit. In some ases the lowest and highest prices are stated.

The prices of Building Materials in Melbourne and Sydney should be, with few exceptions, those also of the other Australian Ports since the cost of manufacture of colonial materials and the freight of imported materials will be similar. The same remarks apply to the cost of *Labour only* from similar wages; this the largest and most important part of an Estimate can be correctly ascertained from this Book and as the cost of materials can be always ascertained upon enquiry, the difficulty of Estimating is thus deprived of much of its uncertainty, in all parts of Australia where the average quality of labour is obtainable.

The former editions of this work were greatly indebted to the arrangement and wording of the Items in the English Price Books, but in the present edition it will be found that much of the last edition has been left out and its place supplied by Items purely Australian.

In conclusion I must refer to the assistance I have received from the Gentlemen engaged in the Building Trade in Melbourne and Sydney and especially from Messrs. Lassetter and Co., of Sydney, who have kindly revised the prices of Builder's Ironmongery, &c. With the view of making this work as complete as possible, I shall be only too glad to receive any information likely to enhance the value of the next edition when called for.

Camperdown,
near Sydney,
October 25th 1877.

CHARLES MAYES.

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TABLE OF THE CIRCUMFERENCES AND AREAS OF CIRCLES,
for either inches, feet, yards, links or chains

Dia.	Circum.	Area.	Dia.	Circum.	Area.	Dia.	Circum.	Area.
			9	28.27	63.62	18	56 55	254.47
¼	0.785	.049	¼	29.06	67.20	¼	57.33	261.59
½	1.571	.196	½	29.84	70.88	½	58.12	268 80
¾	2.356	.442	¾	30.63	74.66	¾	58 91	276.12
1	3.142	.785	10	31.42	78.54	19	59.69	283.53
¼	3.927	1.227	¼	32.20	82.52	¼	60.47	291.04
½	4.712	1.767	½	32.99	86.59	½	61.26	298.65
¾	5.498	2.405	¾	33.77	90.76	¾	62 05	306.35
2	6.283	3.142	11	34.56	95.03	20	62.83	314.16
¼	7.069	3.976	¼	35.34	99.40	¼	63.62	322.06
½	7.854	4.909	½	36.13	103.87	½	64.40	330.06
¾	8.639	5.939	¾	36.91	108.43	¾	65.19	338.16
3	9.425	7.068	12	37.70	113.10	21	65.79	346.36
¼	10.210	8.296	¼	38.48	117.86	¼	66.76	354.66
½	10.995	9.621	½	39.27	122.72	½	67.54	363.05
¾	11.781	11.044	¾	40.05	127.68	¾	68,33	371.54
4	12.566	12.566	13	40.84	132.73	22	69.11	380.13
¼	13.351	14.186	¼	41 63	137.89	¼	69.90	388.82
½	14.137	15.904	½	42.41	143.14	½	70.69	397.61
¾	14.922	17.720	¾	43.20	148.49	¾	71.47	406.49
5	15.71	19 63	14	43.98	153.94	23	72.26	415.48
¼	16.49	21.65	¼	44.77	159 48	¼	73.04	424.56
½	17.28	23.76	½	45.55	165.13	½	73.83	433.73
¾	18.06	25.97	¾	46.34	170.87	¾	74.61	443.01
6	18.85	28.27	15	47.12	176.71	24	75.40	452 39
¼	19.63	30.68	¼	47.91	182.65	¼	76.18	461.86
½	20.42	33.18	½	48.69	188.69	½	76.97	471.44
¾	21.20	35.78	¾	49.48	194.83	¾	77.75	481.11
7	21.99	38.48	16	50.26	201.06	25	78.54	490.87
¼	22.78	41.28	¼	51.05	207.39	¼	79.32	500.74
½	23.56	44.18	½	51.84	213.82	½	80.11	510 71
¾	24.35	47.17	¾	52.62	220.35	¾	80.90	520.77
8	25.13	50.26	17	53.41	226.98	26	81.68	530.93
¼	25.92	53.46	¼	54.19	233.70	¼	82.47	541.19
½	26.70	56.74	½	54.98	240.53	½	83.25	551.55
¾	27.49	60.13	¾	55.76	247.45	¾	84.04	562.00

TABLE (*Continued,*) SHOWING CIRCUMFERENCES AND AREAS OF CIRCLES, *for either inches, feet, yards, links, or chains.*

Dia.	Circum.	Area.	Dia.	Circum.	Area.	Dia.	Circum.	Area.
27	84 82	572.56	36	113.10	1017.9	45	141.37	1590.4
¼	85.61	583.21	¼	113.88	1032.1	¼	142.16	1608.2
½	86.39	593.96	½	114.67	1046.4	½	142.94	1626 0
¾	87 18	604 81	¾	115.45	1060.7	¾	143.73	1643.9
28	87.96	615.75	37	116.24	1075.2	46	144.51	1661.9
¼	88.75	626.80	¼	117.02	1089.8	¼	145.03	1680.0
½	89.53	637.94	½	117.81	1104.5	½	146.08	1698.2
¾	90.32	649.18	¾	118.59	1119.2	¾	146.87	1716 5
29	91.11	660.52	38	119.38	1134.1	47	147.66	1734.9
¼	91.89	671.96	¼	120 17	1149.1	¼	148.44	1753 5
½	92.68	683.49	½	120.95	1164.1	½	149.23	1772.1
¾	93.46	695 13	¾	121.74	1179.3	¾	150.01	1790.8
30	94 25	706.86	39	122.52	1194.6	48	150.80	1809.6
¼	95.03	718 69	¼	123.31	1209.9	¼	151.58	1828.5
½	95.82	730.62	½	124.09	1225.4	½	152.37	1847.5
¾	96.60	742.64	¾	124.88	1241.0	¾	153.15	1868.6
31	97.39	754.77	40	125.66	1256 6	49	153 94	1885.7
¼	98.17	766.99	¼	126.45	1272.4	¼	154 72	1905.0
½	98 97	779 31	½	127.23	1288.2	½	155.51	1924.4
¾	99.75	791.73	¾	128.02	1304 2	¾	156.29	1943.9
32	100.53	804 25	41	128.81	1320.3	50	157.08	1963.5
¼	101.32	816.86	¼	129.59	1336.4	¼	157.87	1983.2
½	102 10	829.58	½	130.38	1352.6	½	158.65	2003.0
¾	102.89	842 39	¾	131.16	1369.0	¾	159 44	2022.8
33	103.67	855.30	42	131.95	1385.4	51	160.22	2042.8
¼	104.46	868.30	¼	132.73	1402,0	¼	161.01	2062 9
½	105.24	881.41	½	133.52	1418.6	½	161.79	2083 1
¾	106.03	894.61	¾	134 30	1435.4	¾	162.58	2103.4
34	106.81	907.92	43	135.09	1452.2	52	163.36	2123.7
¼	107.60	921.32	¼	135.87	1469.1	¼	164.15	2144.2
½	108.38	934.82	½	136.66	1486.2	½	164.93	2164.8
¾	109.17	948.41	¾	137.45	1503.3	¾	165.72	2185.4
35	109,96	962 11	44	138.23	1520.5	53	160.50	2206.2
¼	110.74	975.90	¼	139.02	1537.8	¼	167.29	2227.1
½	111.53	989.80	½	139.80	1555.3	½	168.08	2248.0
¾	112,31	1003.7	¾	140.59	1572.8	¾	168.86	2269 1

TABLE (*Continued*), SHOWING CIRCUMFERENCES AND AREAS OF CIRCLES, *for either inches, feet, yards, links, or chains.*

Dia.	Circum.	Area	Dia.	Circum.	Area.	Dia.	Circum.	Area.
54	169.65	2290.2	63	197.92	3117.3	72	226.20	4071.5
¼	170.43	2311.5	¼	198.71	3142.0	¼	226.98	4097.8
½	171.22	2332.8	½	199.49	3166.9	½	227.77	4123.3
¾	172.00	2354.3	¾	200.28	3191.9	¾	228.55	4156.8
55	172.70	2375.8	64	201.06	3217.0	73	229.34	4185.4
¼	173.57	2397.5	¼	201.85	3242.2	¼	230.12	4214.1
½	174.36	2419.2	½	202.63	3267.5	½	230.91	4242.9
¾	175.14	2441.1	¾	203.42	3292.8	¾	231.69	4271.8
56	175.93	2463.0	65	204.20	3318.3	74	232.48	4300.9
¼	176.72	2485.1	¼	204.99	3343.9	¼	233.26	4330.0
½	177.50	2507.2	½	205.77	3369.6	½	234.05	4359.2
¾	178.29	2529.4	¾	206.56	3395.3	¾	234.83	4388.5
57	179.07	2551.8	66	207.35	3421.2	75	235.62	4417.9
¼	179.86	2574.2	¼	208.13	3447.2	¼	236.41	4447.4
½	180.64	2596.7	½	208.92	3473.2	½	237.19	4477.0
¾	181.43	2619.4	¾	209.70	3499.4	¾	237.98	4506.7
58	182.21	2642.1	67	210.49	3525.7	76	238.76	4536.5
¼	183.00	2664.9	¼	211.27	3552.0	¼	239.55	4566.4
½	183.78	2687.8	½	212.06	3578.5	½	240.33	4596.4
¾	184.57	2710.9	¾	212.84	3605.0	¾	241.12	4626.4
59	185.35	2734.0	68	213.63	3631.7	77	241.90	4656.6
¼	186.14	2757.2	¼	214.41	3658.4	¼	242.69	4686.9
½	186.93	2780.5	½	215.20	3685.3	½	243.47	4717.3
¾	187.71	2803.9	¾	215.99	3712.2	¾	244.26	4747.8
60	188.50	2827.4	69	216.77	3739.3	78	245.04	4778.4
¼	189.28	2851.1	¼	217.56	3766.4	¼	245.83	4809.1
½	189.07	2874.8	½	218.34	3793.7	½	246.62	4839.8
¾	190.85	2898.6	¾	219.13	3821.0	¾	247.40	4870,7
61	191.64	2922.5	70	219.91	3848.5	79	248.19	4901.7
¼	192.42	2946.5	¼	220.70	3876.0	¼	248.97	4932.8
½	193.21	2970.6	½	221.48	3903.6	½	249.76	4963.9
¾	193.99	2994.8	¾	222.27	3931.4	¾	250.54	4995.2
62	194.78	3019.1	71	223.05	3959.2	80	251.33	5026.6
¼	195.56	3043.5	¼	223.84	3987.1	¼	252.11	5058.1
½	196.35	3068.0	½	224.62	4015.2	½	252.90	5089.6
¾	197.14	3092.6	¾	225.41	4043.3	¾	253.67	5121.2

TABLE (*Continued*), SHOWING CIRCUMFERENCES AND AREAS OF CIRCLES, *for either inches, feet, yards, links, or chains,*

Dia.	Circum.	Area.	Dia.	Circum.	Area.	Dia.	Circum.	Area.
81	254.47	5153.0	87	273.32	5944.7	93	292.17	6792.9
½	256.04	5216.8	½	274.89	6013.2	½	293.74	6866.2
82	257.61	5281.0	88	276.46	6082.1	94	295.31	6939.8
½	259.18	5345.6	½	278.03	6151.4	½	296.88	7013.8
83	260.75	5410.6	89	279.60	6221.2	95	298.45	7088.2
½	262.32	5476.0	½	281.17	6291.3	½	300.02	7163.0
84	263.89	5541.8	90	282.74	6361.7	96	301.50	7238.2
½	265.47	5608.0	½	284.31	6432.6	½	303.16	7313.6
85	267.04	5674.5	91	285.89	6503.9	97	304.65	7389.8
½	268.61	5741.5	½	287.46	6573.6	98	307.84	7542.9
86	270.18	5808.8	92	289.03	6647.6	99	311.00	7697.7
½	271.75	5876.6	½	290.60	6720.1	100	314.16	7854.0

CIRCUMFERENCES.—If the diam. is between 100 and 200, call the radius the diam. and double the given circumference. If between 200 and 300, enter the Table with one-third the diam., and multiply the given circumference by 3. If between 300 and 400, or 400 and 500, enter the Table with one-fourth or one-fifth, and multiply by 4 or 5, and so on for any number, taking care to multiply the given circumference by the same figure that you divided the diam. by.

EXAMPLE.—Required the circumference of a circle whose diam, is 152.—Enter the Table with the radius 76, the circumference given is 238.76 and 238.76, x 2 = 477.52, the circumference required.

AREAS.—If the diam. is more than 100, enter the Table with one-half or one-third, &c., as above, and multiply the area given by (4, or 9 &c.,) the *square* of the figure you divided the diam. by.

EXAMPLE.—Required the area of the circle given in the last example. Opposite to 76 the area given is 4536.5 and 4536.5 x 4 [2 x 2]= 18146.0, the area required.

CAPACITY.—The given or ascertained areas in inches, multiplied by 0.0443, or the areas in feet multiplied by 6.23, will give the number of gallons equal to the area, by one foot in depth.

EXAMPLE.—Required the contents per lineal foot of a 15 in. pipe The area given is 176 71 and 176 71 x .0433=7.65 gallons, See p. 16. The contents per foot in depth of a tank 12 ft. diam. will be = 113.10 x 62.3 = 704 6 gallons

Per cubic yard, including plant, powder, &c.

Wages, 1s. per hour.

	s.	d.
Sand or loose soil, shovel work	0	6
Hard ditto or loam, shovel and heel work	0	9
Wet mud, sand, or silt, ditto	1	0
* Getting and casting, or filling, not more than six feet deep, *pick and shovel work*	1	3
* Ditto, from 6 to 12 feet ditto	1	6
Ditto, from 12 to 18 feet deep, ditto	1	9
If in stiff clay or hard gravel, add to items*	0	3
If in soft rock or loose boulders, add do.	0	6
If in hard sandstone or shale, add do.	1	0
If in compact bluestone or trap, add do.	2	6
If in compact granite, gneiss, or sienite, add do.	4	0
If wheeled one *run* of 20 yards, add	0	3
Ditto for every additional *run*, add	0	3
Filling in, ramming, and punning ground (in layers) around foundation walls, &c.	0	6

N.B.—If the excavation is from the face of an open cutting, the cost will be the same as if not more than 6 feet deep as per 4th item. Items 5 and 6 are only used when the earth is raised to the surface in lifts as in cellars or basements, gasholders, &c.

CARTAGE *per cubic yard.*

	s.	d.		s.	d.
Filling, carting, and tipping, *lead* not more than quarter mile	1	6	to	2	3
Carting only, and tipping ditto	0	6	to	0	9
Filling, carting, and tipping from quarter to half mile *lead*	2	0	to	3	0
Carting only, and tipping ditto	1	0	to	1	6
Add for every extra half mile ditto	0	6	to	0	9

N.B.—If two single horse drays are used and sufficient men filling to keep the horses employed, the lowest prices will be sufficient.

If the quantity is large and temporary iron roads are laid down, the items for cartage only will be about half those stated.

Per superficial yard, including plant, tools, &c.

Wages, 1s. per hour.

Levelling made earth, depth not more than one foot	0	3 to 0	4
Surface forming for roads not more than 9 inches deep, in earth	0	3 to 0	6
Ditto do. in rock	0	9 to 1	0
Soiling slopes of embankments and cuttings	0	4 to 0	6
Removing and relaying grass turf, for lawns, &c.			1 0

CUTTINGS AND EMBANKMENTS.—In equalising the contents of cuttings and embankments for roads, railways, &c., it is not usual to make any allowance for the increased bulk of loose material, except in increasing the height of the embankments for settlement, the extent of which will depend upon the material, rock settling down the least, and wet clay the most; but if the embankments are comparatively free from clay they will measure at least 10 per cent. more than the cuttings they were taken from, even after subsiding or consolidating. As a rule it is considered favourable to the contractor to pay him for embankments, if he has taken the work by the cubic yard.

Proportion of getters, fillers, and wheelers, for run of 40 yds.

	Getters.	Fillers.	Wheelers.
In loam, earth, sand, gravel, clay, &c. ...	1	1	1
Hard earth or gravel, marl, &c.	1	2	2
Hard clay, loose shale, &c.	4	5	5
Rock, if blasted, or broken up from ...	3	1	1

MEASUREMENT OF EARTHWORK.

In the measurement of cuttings and embankments with slopes the common system of average heights gives less and the common system of average areas gives more than the true contents; the proper system is by the *prismoidal formula* from which the annexed table for the calculation of earthwork is calculated, but even in this case the cross section is presumed to be perfectly level, the slopes to be quite true, and the change from chain to chain regular and gradual, otherwise the measurement is incorrect.

To show the necessity of correctly ascertaining the cubical contents of earthwork where the contractor tenders for a *lump* sum, I have taken the following from McNeil's Earthwork Tables, which are calculated from the *prismoidal formula* :—

"In calculating the contents of embankments and cuttings in a section, the true content of which is 332,390 cu. yds., by the common method of mean heights is only 310,652 cu. yds., thus making 21,738 cu. yds. less than the true content; by the common method of mean areas the error in excess will be 43,487 cubic yards."

PRISMOIDAL FORMULA.—Average area equal to 4 times the middle area added to the sum of the end areas and divided by 6. In using the following constants instead of dividing the sum of the areas by 6, multiply them by the constant required for the length in chains.

Sum of areas in feet multiplied by	0·2037	= cu. yds.	in ¼ chain.
Ditto	0·4074	„ cu. yds.	in 1 chain.
Ditto	0·6111	„ do.	in 1½ do.
Ditto	0·8148	„ do.	in 2 chains
Ditto	1·2222	„ do.	in 3 do.
Ditto	1·6296	„ do.	in 4 do.
Ditto	2·0370	„ do.	in 5 do.
Ditto	2·4444	„ do.	in 6 do.

CROSS SECTIONS of cuttings and embankments, and all irregular sided figures may be reduced to one trapezium and the area found with a parallel ruler and set square (with double the proper scale to save dividing) in about one-fourth the usual time occupied by the common method of calculating areas.

BORING.

Per foot in depth.

	s.	d.
Boring in ordinary soils, including use of tools and tackle, but not pipes, down to 20 feet . .	2	3
Ditto, for every foot from the top down to 40 feet.	3	4
Ditto, do. do. 60 feet	4	9
Ditto. do. do. 80 feet	7	6
Ditto, do. do. 100 feet	10	6
Ditto, do. do. 200 feet	21	0

Add 25 per cent. to the above, if through hard gravel or soft rock.

Ditto 50 per cent. if through compact sandstone or hard shale.

Reckon twice the amount if through basalt or bluestone, and three times if through granite.

The above prices down to 200 feet are for a bore-hole not exceeding 4 inches, to be made truly vertical by using boring rods 1 inch square, so that pipes may be inserted if required. If pipes are used they should be of wrought iron, except for very deep holes, when cast iron pipes are required, being thicker and more easily driven.

For weight and cost of wrought and cast iron pipes, *See* INDEX.

A TABLE *showing the Quantity of Earth to be removed, the Number of Bricks, and quantity of Water, in Imperial Gallons, contained in circular Wells for each Foot in Depth.*

Diameter in the Clear.		½ Brick Rim.			1 Brick Rim.			Contents in imperil. Gallons.
		Cubic feet of digging.	Number of Bricks		Cubic feet of digging.	Number of Bricks.		
Ft.	In.		Laid Dry.	In Mortar.		Laid Dry.	In Mortar.	
1	0	2 4	28	23	4 9	70	58	4.9
1	3	3 1	33	27	5 9	80	66	7.6
1	6	4 0	38	31	7 1	90	74	11.0
1	9	4 9	43	35	8 3	102	82	15.0
2	0	5 9	48	41	9 6	112	92	19.6
2	3	7 1	53	44	11 0	122	100	24.8
2	6	8 3	58	48	12 6	132	108	30.6
3	0	11 0	68	57	15 9	154	126	44.0
3	6	14 2	79	65	19 6	174	142	61.0
4	0	17 7	89	73	23 8	194	159	78.3
4	6	21 6	100	82	28 3	214	176	99.1
5	0	26 0	110	90	33 2	234	192	122.3
5	6	30 7	120	98	38 5	254	209	148.0
6	0	35 8	130	107	44 2	276	226	176.2
6	6	41 3	140	115	50 3	296	242	206.8
7	0	47 2	150	123	56 7	316	260	239.8
7	6	53 5	160	131	63 6	336	276	275.3
8	0	60 1	170	140	70 9	358	292	313.2
8	6	67 2	180	148	78 5	378	308	353.6
9	0	74 7	191	156	86 6	398	326	396.5
10	0	90 8	212	174	103 9	438	360	489.5

BEVELED BRICKS are sometimes used for small wells and tanks, by which the labour of cutting the ends of the bricks is saved, and a finer joint obtained. If built with half brick rim the inner face of 9 inch bricks will measure as follows, viz. :—

Clear diam.		Clear diam.		Clear diam.	
Feet.	Inches.	Feet.	Inches.	Feet.	Inches.
1½	6	3	7¼	4½	8
2	6½	3½	7½	5	8⅛
2½	7	4	7¾	6	8⅜

COST OF WELLS.—If the cost of a well is required without steining or brick lining, reckon the cost of excavation at per cubic foot for each foot in depth from the number of cubic feet given in the above table, as shown in the following Example on page 17:—

Per cubic foot, including tools, tackle, and powder.

Wages of well-digger, 1s. per hour.

	s.	d.
Excavation for wells not more than 20 feet deep, light ground	0	1
Ditto, in stiff clay or hard gravel	0	1½
Ditto, in sandstone, hard rock, or shale	0 4 to 0	6
Ditto in bluestone or other trap rock	0 8 to 1	0
From 20 to 40 feet deep add one third		
From 40 to 70 feet deep add two thirds.		
From 70 to 100 feet deep reckon double.		

N.B.—In the third and fourth items take the least time for the largest, and the greatest time for the smallest wells, on account of the difficulty of working and blasting rock in confined areas.

DRY STEINING.—If steining is required, reckon for the labor required in laying every 100 bricks laid dry, from 1s. 8d. to 2s. 6d. according to depth.

COST OF TANKS.—In estimating from the foregoing table the cost of lining tanks with brickwork, reckon bricklayer and laborer 1¼ hour, also ½ bushel lime and 1 bushel of sand for each 100 bricks required. If brick in cement reckon bricklayer and laborer 1½ hour, also ¾ bushel of cement and ¾ bushel of sand per 100 bricks required, as given in Table.

Example.—Required the cost per foot in depth, for a tank not more than 20 feet deep (in stiff clay), 8 feet clear diameter with 9 inches or one brick rim.

By preceding table and the above excavation, we have—

	£	s.	d.
Excavation, 70¾ cu. ft. at 1½d (see above and page 16)	0	8	10
292, say 300 bricks, delivered at 6s. per 100	0	18	0
Bricklayer and laborer, 1¼ x 3=3¾ hours at say 2s. 6d. per hour	0	9	4
1½ bushels lime, say 2s. 6d., and 3 bushels sand 6d.	0	3	0
Cost price per foot in depth	£1	19	2

BRICKWORK.—If domed with a hemisphere the cubic contents may be found thus :—Multiply the square of the mean diameter by 3 1-7th, and the product by the thickness of the dome, and divide by 2. In the above *Example* the cubic contents of the dome would be 8 ft. 9 in. x 8 ft. 9 in. x 3 1-7th ft. x 9 in=180½ cubic feet divided by 2=90¼ cubic feet.

GUTTERING.—In rock excavation, where any portion of sides are required to be left even or picked, a groove or gutter must be kept in advance of the main excavation to prevent injury to sides by blasting. In such cases the above prices per foot cube will also be about equal to the cost per foot super. of picked wall, and which must be added to the price for excavation in small spaces.

TUNNELLING.

The *drive* at head of tunnel will generally cost 50 per cent. more than the above prices for wells or shafts.

Per lineal foot (all found).

Drive 6 x 3 in hard compact rock slate, &c., from 30s. to 40s.

Ditto in the hardest rocks, 60s. to 80s.

RAILWAY TUNNEL.—If the rock is self-supporting, after reckoning the cost of guttering both sides and top, the *core* may be removed at about double the cost of similar rock in open cutting, but when timbering is required for subsequent lining the cost is uncertain.

Tunnel 20 x 15 curved all round, through hard rock, per cu. yard, 14s.

Ditto ditto, through granite or greenstone, 20s.

DYNAMITE.

As a substitute for blasting powder in quarrying, tunnelling, shaft or well sinking, clearing trees, &c., dynamite has the following advantages :—

1. Its cost, compared to the amount of work got through, is about half that of gunpowder.
2. It can be used in wet workings with better results than any other explosive.
3. It is much safer than gunpowder, either in carriage, storage, or actual use, since it will not explode with a spark, or even the application of ordinary fire, but merely burns slowly away, and cannot be made to explode by being dropped from a great height on to rocks. These facts relating to its safety are fully borne out by official evidence given before the House of Commons "Select Committee on Explosive Substances" in 1874. Full instructions as to the best way of using it is given by the Patentee's agents in Melbourne and Sydney. Although more than 4000 tons are now annually used for blasting, there have been no accidents in transit or storage. Its cheapness, compared to gunpowder, was proved by the contractors for the railway tunnel under Clifton Downs, England, with the following *results in the same time*, the bore-holes being of the same size and depth :

Gunpowder.—Distance driven, 8 lineal yards with 31 shots or bore-holes per yard forward.

Dynamite.—Distance driven, 15 lineal yards, with only 17 bore-holes or shots per yard forward.

The relative cost for 15 lineal yards was £29 10s. 7d. for gunpowder, and £16 10s. for dynamite, besides the great saving in labor and time on account of 210 fewer bore-holes being required for the 15 lineal yards, with a corresponding saving in fuse.

Dynamite is a compound of 75 per cent. of nitro-glycerine with 25 per cent. of porous earth, and is in the form of paste or putty. It is fired with a heat of 420° Fahrenheit, and if frozen should not be thawed by stoves, but by being put into a can, which is then placed in a vessel of hot water.

QUARRYING.

Rough or scappled stone at any Australian quarry.

	Freestone.		Bluestone.	
	s.	d.	s.	d.
Footings, or block in course p. perch	12	0	14	0
Parapet, scappled on both sides, per perch of 16½ lin. ft.	12	0	14	0
9 inch ashlar, 33 lin. ft., per perch	12	0	14	0
Rubble, per perch of 25 cubic ft. ...	3	0	4	0
Lintels, steps or sills (ordinary) at per lin. ft.	0	6	0	8
*Dimension stones from 6 to 12 cu. ft., per cu. ft.	0	10	1	0
Ditto 12 to 24 do.	1	0	1	6
Ditto 24 to 36 do.	1	6	2	0
Ditto 36 to 60 do.	2	0	2	6
Hearth stones, freestone, from 4 to 6 ins. thick, per sup. ft.... ...	0	6	0	0
Flag stones, various lengths ...	0	4	0	0
Cubes or paving stones, 12 x 4 x 9, per sup. yard	3	0	4	0
9 inch pitchers, 9 x 9 x 9, per sup. yd.	2	6	3	0
Curbs, for footpaths, &c., 15 x 6, p. l. f.	0	4	0	6
Ditto, 18 x 8	0	6	0	8

The above prices apply more particularly to Sydney, Parramatta, and Hobart Town for freestone, and Melbourne for bluestone, and include delivery within two miles of the quarry at these places, on account of the large and constant demand.

*Where there are suitable appliances, as at Sydney and Melbourne, the largest dimension stones may be obtained at the smaller prices given.

Per cubic yard.

Wages of stonebreaker, 1s. per hour.

	s.	*d.*
Bluestone or trap rock, broken to a 2½ inch ring gauge	6	0
Ditto 2 inch ditto	8	0
If raked over and rebroken.	2	0
If broken from 2½ to 2 in. add	4	0
If hard sandstone, gritstone, or quartz, deduct one fourth from each item		
Wheeling and spreading within 20 lineal yards .	1	8

For Quarrying and Carting, See EXCAVATION.

MEM.—Road metal or bluestone ballast if broken to a 4 inch gauge, and exposed for about 6 months, will take as long to reduce to a 2 inch ring gauge as it took to break it in the first instance to a 4 inch gauge from common rubble.

Stonebreaking machines will break about 4 cubic yards of 2 inch ring gauge bluestone per hour, with two men to supply the stone, &c., at about 1-3rd the present cost of hand breaking.

If *spalls* can be obtained at a quarry within a mile of the machine, 2 inch ring gauge bluestone metal may be supplied and loaded into trucks or drays at a cost of 3s. 3d. per cubic yard.

The metal broken by these machines contains more dust than hand broken metal, and is therefore not considered to be worth quite so much per cubic yard, although it is better adapted for railway ballast, and when used for road metal does not require blinding, or mixing with sand when used for concrete or *beton*.

HOPES' Stone-breaking Machine, requiring 8-horse power engine, will break, on an average, 5 cubic yards of 2-inch metal per hour. Its superiority is due mainly to its patent cubing jaws, which have been fitted to other machines with marked advantage.

In measuring ballasting the sleepers should be deducted for *net measure*.

WEIGHT OF RUBBLE, BALLAST, AND METAL, *per cubic yard.*

Granite rubble, about 32 cwt,
Bluestone rubble, from 28 to 30 cwt.
Sandstone ditto, 26 to 27 cwt.
2½ inch bluestone or quartz metal, about 27 cwt.
2 inch ditto ditto, about 26 cwt.
2½ sandstone ballast, about 25 cwt.
2 inch ditto, about 24 cwt.
Sand or fine gravel ballast, from 22 to 23 cwt.
Engine or smithy coal or coke ashes, from 12 to 14 cwt

Drain Pipes of glazed earthenware.

Laid complete per foot run.

	Lin. feet *per ton.*	Excavation. *s.*	*d.*	Materials. *s.*	*d.*	Laying only. *s.*	*d.*
3 inch pipes	404	0	1	0	5	0	2
4 inch	248	0	1½	0	7	0	2½
6 inch	142	0	2	0	9	0	3
9 inch	84	0	2½	1	5	0	3½
12 inch	96	0	3	2	3	0	4
16 inch	27	0	4	4	6	0	8
18 inch	22	0	5	6	0	1	0
21 inch	18	0	7	10	6	1	3
24 inch	14	0	8	14	0	1	8
6 inch flap traps, each		0	4	11	0	1	0
9 inch		0	6	17	0	1	0
12 inch		0	8	21	0	1	4
16 inch		1	0	26	0	2	0

The pipes and junctions average 2 feet long, bends about 18 inches long.

Excavation.—This item is reckoned 3 feet deep by required width, including filling and ramming over pipes at two shillings per cubic yard. The cost of any other depth up to about 7 feet may be seen from this : if at the same price per cubic yard, 5 feet deep will be about double, and 7 feet deep about treble the price, on account of extra width at top required to lay the pipes.

Materials.—This item includes the cost of the pipes delivered in Sydney or Melbourne with about 10 per cent. for jointing, &c.

Single junctions, sloping or square, 50 per cent. extra
Double junctions, 100 per cent., or double the price
Syphons, about 3 feet long each—4 inch 4s., 6 inch 7s. 6d.

The price of drain pipes varies greatly in Melbourne, but the average price is similar to those in Sydney which are here given.

At Ballarat the pipes are cheaper than in either Melbourne or Sydney. A 4-inch water pipe, ¾-inch thick, with long spigot and faucet ends for low pressure, is sold here at 6d. per foot run.

By comparing the cost of 18 inch pipes laid complete as above with the cost of 18 inch plain culverts with ½-brick rim in cement at even £4 per cubic yard, it will be seen they are about equal. It will therefore be cheaper to build even 18 inch brick in cement culverts with materials at hand than to pay extra for the cartage of pipes.

The larger size pipes appear to *greater* disadvantage when compared with similar sized *culverts*.

Concrete.—*Per cubic yard.*

	s.	d.
Labour in mixing, wheeling and casting concrete, wages of labourer 1s. per hour . . .	3	4

Cost of a cubic yard of concrete.

	£	s.	d.
1 and one-tenth cubic yard of gravel or broken metal delivered on the work			
6 bushels of roche lime, including cartage, at per bushel			
Labour as above per hour			
Net cost			

Tall's Patent Cement Concrete, which is now being largely used in Great Britain as a cheap substitute for brick and stone work, is composed of about six parts clean gravel or burnt clay to one part of Portland cement. It is equal in strength to brickwork in cement, and is even much cheaper than ordinary brickwork. It is built in moveable frames in courses about eighteen inches high, after the method pursued in constructing pisè houses. Its cheapness in Great Britain is mainly owing to the low price of Portland cement there.

Coke Concrete.—Coke, or breeze and cement, has long been effectively used in Sydney and Melbourne as a concrete for small floor roofs, the coring of marble cement chimney pieces, &c.

Clay Puddle.

Per cubic yard.

Wages of labourer 1s. per hour, with use of tools.

	s.	d.
Excavating for clay, getting, filling, and wheeling one stage, not exceeding 20 yards . . .	2	2
Chopping and watering for tempering . . .	1	0
Tempering after clay has been soaked . . .	1	0
*Filling, wheeling one stage, tipping to place required, and treading	1	5
If unbearing is required to get at the clay, add per foot in depth to be removed	0	5
	6	0

When the clay is tipped into, and can be tempered in the place required, leave out item marked thus *

Clay puddle, when properly prepared, should be similar to brick earth ready for moulding.

The use of concrete or *beton* (concrete made with cement instead of lime) would form an excellent substitute for thin layers of puddle, when clay is not obtainable.

N.B.—The above data relating to clay puddle is from notes taken during the construction of the Yan Yean reservoir dam.

MASONRY.

All materials complete per perch.

	£	s.	d.
Hammer squared coursed rubble not more than 18 inches thick, including through stones . .	0	12	6
Ditto, if more than 10 feet high, add ditto .	0	2	6
Random rubble in walls or abutments . .	0	10	0
Hammer dressed through stone footings, with rough dressed beds (not more than 2 feet long)	1	5	0
Pitch quarry faced, block in course or rough ashlar bluestone or Sydney sandstone . .	1	5	0
Church or warehouse walls, 18 in. thick, neatly dressed on both sides Sydney sandstone . .	1	15	0
Buttresses ditto on both sides and front ditto .	2	0	0

N.B.—Items stating the cost of the best class of masonry, all materials, cannot be arrived at without going into details too voluminous for a work of this kind.—*See* RULES FOR ESTIMATING, page 27.

BLUESTONE.

At Melbourne and other Quarries.

	s.	d.
Ashlaring, sills, steps, lintels, per cubic foot ...	0	9
Curbing to dress, 15 by 6, per lineal foot	0	6
Ditto ditto, 18 by 8, ditto	0	8
Cubes or paving stones, 12 x 4 x 9 per yard sup....	4	0
Ditto or pitchers, 9 x 9 by 9 ditto ...	3	0
Rubble, per cubic yard	4	3

SYDNEY AND OTHER SIMILAR FREE (SAND) STONE.

At the Quarries.

Footings, parapet, ashlar, or block, in course p. perch	12	0
Steps, sills, or lintels (ordinary), per lineal foot ...	0	5
Hearths, per sup. foot	0	8
Flagging, rough unsquared, ditto	0	5
Dimension stones (size limited by tackle used), per cubic foot	0	10

Ashlaring (9-inch), 33 lineal feet per perch.
Parapet (12-inch), 25 do. do.

Rough or Scappled Stone.

Delivered in Melbourne per cube foot.

	s.	d.
Spring Bay (Hobart Town) free sandstone up to 15 cubic feet	4	6
Barrabool Hills (Geelong) freestone up to 10 cu. ft.	2	6
Waurn Ponds (Geelong) free (lime) stone ditto ...	3	0
Omarau (New Zealand) free (lime) stone to 30 c. ft.	4	0
Typo ditto ditto ditto ...	4	6
Bluestone (Melbourne) up to 60 c. ft.	1	0
Barrabool Hill freestone, delivered in Geelong, to 24 c. ft.	2	6
Sydney free (sand) stone up to 60 c. ft., delivered in Sydney	1	0
Gabo Island granite, for columns 10 to 12 feet long, delivered in Melbourne or Sydney	20	0
Mount Alexander granite at Harcourt Quarry ...	2	0
Cooma (N. S. Wales) grey granite at quarries ...	1	6

Cartage.

	s.	d.
Carting bluestone, granite, or sandstone one mile, per ton (See "Weight of Materials")	2	0
Add for each mile beyond, per ton	0	6
Carting rubble per perch (measured in wall), one mile ... ... 2 6 to	2	8
Add for each additional mile ... ... 0 6 to	0	8

Sawing and Polishing.

Per foot super.

	s.	d.
Sawing Omarau (N. Zealand) or Geelong freestone	0	9
Sawing Sydney or Spring Bay free sandstone ...	1	0
Marble Italian or Marulan (N. S. W.), sawing or polishing, each	1	6
Black marble ditto	2	6
Polishing granite ... ... 3 0 to	5	0

Bluestone, sawn by machinery, is now largely used in Melbourne at a cheap rate. See page 29.

CULVERTS.—*Per lineal yard, all materials.*

	£	*s.*	*d.*
18 inch square hammer dressed. with true beds and joints (sandstone handy) . . .	1	10	0
24 inch square ditto ditto	2	0	0
5 to 10 feet culverts with rough radiating joints, including the ends or faces of culvert, p. c. yd.	3	0	0
18 inch radiated masonry to tunnels, all through stones, curved picked face and boastered joints per cubic yard in sandstone . .	4	0	0

STONE CUTTING.

Labour only, per foot super.	Spring Bay Sandstone.		Bluestone or Basalt.		Sydney Sandstone.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Rubbed sandstone or fine axed bluestone	1	3	2	0	1	0
Ditto sparrow picked or tool stroked*	1	6	3	0	1	3
Plain work to sandstone or ordinary axed bluestone, 2nd rate...	0	9	1	6	0	7
Ditto fine chiselled* or tool stroked, 2nd rate	1	1½	2	3	0	11
Boastered or dweft and dab sandstone or axe dressed bluestone, 3rd rate	0	6	1	0	0	5
Punched sandstone or dressed bluestone, 4th rate for beds and joints	0	5	0	8	0	4
Pitched quarry face	0	1	0	2	0	1
Vermiculated work, sharp arrises, clean tooled	3	0	6	0	2	6
Ditto, ridges not tooled ...	2	3	4	6	2	0
Fretwork, inch bands, clean tooled	2	6	5	0	2	0
Ditto 2 inch bands, ditto ...	2	0	4	0	1	8
Mouldings, tooled, large ...	2	0	3	6	1	8
Ditto, do, small ...	3	0	5	0	2	6

Labour only, per foot run.	Sydney Sandstone. s.	d.	Spring Bay Sandstone. s.	d.
Single bead, reed or flute, $\frac{3}{4}$ in. or inch	0	6	0	8
Double do., do.	0	8	0	10
Treble do or moulded	1	0	1	3
Diminished flutes, including arrises from 1 inch to $1\frac{1}{2}$ inch diameter ...	0	8	0	10
Ditto, from $1\frac{1}{2}$ to 2 inches do ...	0	9	0	11
Ditto, from 2 to $2\frac{1}{2}$ inches do ...	0	10	1	1
Ditto, from $2\frac{1}{2}$ to 3 inches do ...	1	0	1	3
Ditto, from 3 to 4 inches do ...	1	2	1	5
Ditto, from 4 to 5 inches do ...	1	3	1	7
Holes jumped or drilled for bolts, &c., 1 or $1\frac{1}{2}$ inch diameter	1	0	1	3
Ditto, do, 2 inches diameter	1	2	1	5
Ditto, do, 3 inches do ...	1	3	1	7
Ditto, do, 4 inches do ...	1	6	1	10
Labour only, each.				
Mortice for iron rails, &c., 1 inch sq.	0	$4\frac{1}{2}$	0	6
Ditto, do, 2 do. ...	0	6	0	8
Ditto, do, 3 do. ...	0	9	0	11
Dentules, 2 inches deep on face, with band	0	$4\frac{1}{2}$	0	6
Ditto, 4 do do	0	9	0	11
Triglyphs and drops, for 12 inch Doric column	3	0	4	0
Ditto, 24 inch do	4	6	5	6
Ball for foot or finial 6 inches diam.	7	6	10	0
Ditto, 8 do ...	9	0	11	6
Ditto, 12 do ...	10	4	13	0
Balusters, either round or square, if 4 ins. largest diam. or side, and 12 ins. high	9	0	11	6
Ditto, if 4 ins. diam, or side, and 18 ins. high	10	0	12	6
Ditto, 8 ins. do. and 24 ins. do ...	11	0	14	0

If any of the foregoing items are required in bluestone or Cooma (N. S. W.) granite, treble the time given for Sydney sandstone.

Cost of working Adelaide marble and the Grampian grey granite is about 25 per cent. more than bluestone.

N.B.—The above prices are for stone that has been quarried not more than a month.

Labour only, per foot cube.

	s.	d.
Setting freestone, sandstone, bluestone, or granite, in blocks not more than 2 cubic feet, including hoisting, scaffolding, and mortar	0	4½
Ditto, if carved or moulded, do	0	6
Ditto, block, from 2 to 6 feet long, do	0	8
Ditto, do, if moulded or carved	0	9
Ditto, do, if above 6 feet long	0	10
Ditto, do, if moulded or carved	1	0

For every 10 feet in height above 40 feet add one-third the above rates.

N.B.—The above rates are given to meet the cost of small quantities of work; but under favourable circumstances, as in a large building, with a *gantry* and proper travelling crane, the cost would probably not exceed one-half.

EXTRA LARGE STONES.—If the stones for cornice exceed 20 cubic feet each, add one-fifth extra to the dressing, on account of the difficulty in handling or turning the stone while being worked; but if most of the stones in the building, viaduct, &c., are of a large size, and the tackle is sufficient to move them easily, it will be found cheaper to dress, hoist, and set large than small stones, because the beds and joints, and the time required for hoisting and setting, are less in proportion to the cubic contents of the former as compared with the latter. This remark applies to pine framing or gantry with travelling cranes, the cost of which is given under the head of Carpentry.

IN ESTIMATING the cost of CUBED or dimension STONE at per *cubic foot*, first take the average size of the stones required and the cost of such stones delivered on the work. Take next the number of superficial feet of face-work in one stone, then the number of feet, super., of dressed beds and joints to the same stone, add the cost of setting the stone, and you cannot fail to arrive at a correct estimate of the net cost of and description of masonry, to which add profit according to the total cost of the work and the time required to finish it.

The different portions of masonry should also be classed as follows, if estimating at per cubic foot:—

One-face work, as ashlaring, or common face work, base courses, plinths, friezes, &c.

Two-face work, as quoins, imposts, architraves, parapets, &c.

Three-face work, as copings, strings, cornices, pilasters, &c.

Four or more face work, as newels and caps, to ditto, blocks to cornices, chimney caps, &c. By such means the defective system of estimating may be pruned of much of its uncertainty; the proper, because the most correct method, being to estimate the rough stone at per cubic foot, and the labour in dressing at per foot super.

Tooled margins, if round rock, or quarry face, which is not measured, to be taken by the foot super., at double their width.

Raised work to be measured as *flat* work, the margins being taken as sunk work.

PROPORTIONATE COST OF SUNK AND CIRCULAR WORK.

Sunk work, 3 inches deep, one-fourth more than similar straight work.

Ditto, 6 inches deep, one-half more.

Circular work, from one-third to one-half more than similar straight work.

Circular-circular or spherical, from two to four times, according to sharpness of curve.

AUSTRALIAN BUILDING STONES.

VICTORIA.—The only really durable building stones of Victoria used in Melbourne are bluestone and granite. The first of these is objectionable, not only on account of its colour, but also on account of the great cost of dressing or working. Our granite, although not objectionable in appearance when dressed, costs in dressing from 1½ to 3 times as much as bluestone; or from 3 to 6 times as much as Spring Bay (Tasmanian) sandstone; or from 6 to 12 times as much as Darley, Barrabool Hills, Castlemaine, and Sandhurst freestones, all of which cost about the same to work as (English) Bath and (French) Caen stone, but are inferior in durability to even the two last, and these, again, are the least durable of the best English building stones.

Waurn Ponds Free limestone, from the Barrabool Hills, near Geelong, has been lately introduced into Melbourne, and is likely to be largely used, being much cheaper than the New Zealand freestones and the best Victorian freestone used in Melbourne.

The Grampian Free Sandstone is apparently a first-class stone as to colour and durability, being very fine, close grained, and weighing about 14 cubic feet per ton. The cost of working is about double that of Spring Bay stone. It has been used in portions of the Town Hall at Stawell, 17 miles from the quarry.

NEW SOUTH WALES.—The Sydney free sandstone is peculiar to the coal measures of New South Wales, and occurs in almost level beds of great thickness. It is only within the last 20 years that the best samples have been used in Sydney. In Victoria it is considered inferior to the imported New Zealand or Hobart Town freestones.

Bluestone and Granite are found in many parts of New South Wales, and are similar to those in Victoria.

NEW ZEALAND.—The free limestones of Oamaru and Typo are largely used in Melbourne. They are similar to Bath and Caen stone in quality. The Bank of Australasia and Imperial Insurance Offices are good samples of these superior freestones.

TASMANIA.—Spring Bay free sandstone is obtained about 30 miles from Hobart Town. It is largely used in Melbourne as a first-class building stone, as may be seen in the façades of the Town Hall.

The Point Ventenet Hobart Town free sandstone, although similar in quality to the Spring Bay stone, is of an objectionable colour, resembling Portland cement lined for the mortar joints. It has been superseded by the Spring Bay stone.

Per foot super. in Melbourne.

	1 in.	1½ in.	2 in.	2½ in.	3 in.
	s. d.	s. d.	s. d.	s. d.	s. d.
Rough slabs for coring ...	0 0	0 5	0 6	0 7	0 8
Flagging, squared only...	0 0	0 10	1 1	1 3	1 4
Steps and sills, nosed and rubbed	0 0	1 9	2 0	2 3	2 6
Shelving rubbed both sides	1 6	1 9	2 0	0 0	0 0
Landings, squared and rubbed one side, up to 18 sup. ft.	0 0	0 0	0 0	1 9	2 0
Ditto, from 18 to 28 s. ft.	0 0	0 0	0 0	2 6	3 0
Hearthstones, squared and rubbed	1 2	1 4	1 6	1 8	1 10
Urinals, rubbed, grooved and prepared for fixing	2 3	2 6	0 0	0 0	0 0
Bluestone sawn and sqrd. flagging	1 0	1 1½	1 2	1 3	1 4

	4 in.	5 in.	6 in.	7 in.	8 in.
	s. d.	s. d.	s. d.	s. d.	s. d.
Bluestone sawn and sqrd. landing up to 12 s. ft.	1 7	2 1	3 4	3 8	4 0
Ditto, from 12 to 18 do.	0 0	0 0	3 10	4 2	4 6
Ditto 18 to 28	0 0	0 0	5 0	5 4	5 8
Ditto 28 to 40, by special agreement.					

PAVING AND FLAGGING.

Labour only, per yard super.	s. d.
Pitching or channeling with 9 in. pitchers	0 10
Cube pitching with 4 x 9 pitchers	1 3
Bluestone curbing, 18 x 6, rough axed and laid p. l. y.	5 0
Ditto circular ditto ditto	6 0 to 9 0
Laying 2 in. to 3 in. squared flagging, jointed in mortar, per sup. yard	1 0

CASTLEMAINE SLATE is now largely used in Melbourne. It is not so easily split as Welsh slate, and in this respect is better adapted for landings, &c., where thickness is an object.

Cisterns, Tanks, Urinals, &c.

Per foot super.

Wages of slate mason, per hour, 1s. 6d.

	Labour only. 1 in.	1½ in.
Slabs, self-faced, grooved, and put together	0 10	1 6
Add if planed, rubbed, or sanded for each side	0 4	0 4½

Bolts or cramps extra, at per lb.
For sinks add 50 per cent. for labour on the above.

Per foot run.

Squaring slabs, or filing edge after saw	0 4½	0 6
Rounded nosing, for steps, &c.... ...	0 6	0 9
Rebate or groove for steps, cisterns, &c.	0 6	0 9
Single groove, in edge, for tongue ...	0 3	0 4½

Welsh slate weighs 14 lbs. per foot super, 1 inch thick,
For prices of Welsh slate *see* p. 32.

Slating.

Per square.

United wages of slater and labourer, 2s. per hour.

	Metal Nails.		Labour only. New roofs.		Stripping.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Duchess, 24 in. by 12 in. ...	0	8	6	0	3	0
Ditto, short, 22 in. x 12 in. ...	0	10	7	0	3	6
Countess, 20 in. x 10 in. ...	1	0	8	0	4	0
Viscountess, 18 in. x 10 in. ...	1	3	9	0	4	6
Ladies, 16 in. x 8 in.... ...	1	6	10	0	5	0
Ditto, short, 14 in. x 8 in. ...	1	9	11	0	5	6

N.B.—If the roofs have no projecting eaves, deduct one fourth.

Required the cost of Countess slating per square, with slates at £14 per 1,000, and wages of slater and labourer together at 2s. per hour.

	£	s.	d.
Slates, as per Table, page 31	2	5	8
Metal nails, as above	0	1	0
Labour, S. and L., 4 hours (as above) at 2s. per hour ...	0	8	0
Net cost per square	£2	14	8

Add for cartage and battens, as per pages 31, &c., and profit on the whole.

MEASUREMENT, *if not otherwise stipulated.*

To the net area covered add the length of the eaves by 1 foot wide; also the length of all cuttings to hips, valleys, dormers, chimneys, &c., by 6 inches wide.

Circular slating, one-third to one-fourth, extra for labour, but for materials according to actual waste in radiating the sides, &c.

Lap or Cover.—The following table is calculated for a lap or cover of 2½ inches, which is ample if every slate is properly secured with two metal nails. If the lap exceeds this, the slates are apt to cock up, and for this reason require cement filleting.

TABLE

Showing the number of slates required, and their weight per 1,000 *and per square, including the number of lineal feet of battens per square for a two-and-a-half inch lap or cover.*

	Weight per 1,000. Cwt.	Number required per square.	Battens. per square lineal feet.	Weight per square lbs.
Duchess	50	111	120	622
Ditto, Short	45⅞	120	130	616
Countess...	33⅜	164	150	613
Viscountess	30	189	170	635
Ladies	20⅞	270	190	631
Ditto, Short	18¼	312	220	638

N.B.—For the price of slating battens and the cost of the labour in battening, *see* page 33 and Carpenters' Work.

The number of slates per square do not include eaves or cuttings, which must be included in the measurement.

TABLE

Showing the cost per square for slates only, laid with two-and-a-half inch lap at different prices, per 1,000.

	₱ 1,000 ₱ sq.			₱ 1,000 ₱ sq.			₱ 1,000 ₱ sq.			₱ 1,000 ₱ sq.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Duchess ...	24	0...52	10	22	0...48	10	20	0...44	6	18	0...40	0
Ditto, Short	22	0...52	10	20	0...48	0	18	0...43	2	16	0...38	5
Countess ...	18	0...59	0	16	0...52	6	14	0...45	8	12	0...39	3
Viscountess	15	0...56	9	14	0...53	0	12	0...45	0	10	0...37	9
Ladies... ...	11	0...59	5	10	0...55	0	8	0...43	2	7	0...37	9
Ditto, Short	9	0...56	2	8	0...49	11	7	0...43	9	6	0...37	6

N.B.—The above table will enable any builder to judge of the comparative value of different kinds of slates at a glance. The price of Welsh roofing slates vary considerably in Melbourne and Sydney, those in the first column being nearest the last current rates. Countess slates are almost exclusively used.

Per foot super.	Melbourne. s.	d.	Sydney s.	d.
3-inch York landings sawn and rubbed ...	3	6		
Marble slabs, all sizes, 1 in. thick polished ...	7	6	8	6
Marulan N.S.W. Marble, ditto ditto			8	0
Ditto Tiles, black or white, 12 in. sq.	3	0	3	6
Ditto ditto ditto 8 in. sq....	5	0		
Slate Welsh 1 in. Slabs, squared and rubbed ...	3	0	3	6
„ „ 1¼ in. ditto ditto ...	3	6	4	0
„ „ 1½ in. ditto ditto ...	4	0	4	6
Minton's patent paving, various patterns, from...	2	0	1	9
„ hearth tiles, 6 x 6 x 1 inch	6	0	6	0
„ bath and window tiles, ⅜ inch... ...	4	0	4	0

EACH.

Chimney pieces, rubbed slate, boxed with caps	60	0	65	0
„ 8 in. jambs, enamelled slate with trusses	75	0	75	0
„ 2 inch York slab, Melbourne and Sydney, from			£2 to	£3
„ marble ditto			£4 to	£60

SANDHURST GRANITE COLUMNS.

Polished Shafts with swell.

	Melb. £	s.	Syd. £	s.		Melb. £	s.	Syd. £	s.
2 ft. x 4 ins. diam.	1	5	1	10	4 ft. x 8 ins. diam.	2	6	2	15
2½ ft. x 5 „	1	9	1	15	5 ft. x 9 „	2	8	2	18
3 ft. x 6 „	1	12	1	19	6 ft. x 10 „	3	0	3	12
3½ ft. x 7 „	1	16	2	4	7 ft. x 12 „	3	4	3	16
Tuscan column 10 ft. (one stone) shaft with base and capital						£220		£225	
Curbing bluestone, dressed and mortised for iron palisading, 12 in. x 7 in, per lin. foot...						7	6		
Steps and cills dressed bluestone or freestone do. ...						3	0		
Bluestone sinks, per sup. ft.						4	0		

COOKBUNDOON SLATE, &c.

	Sydney. s.	d.
Hearthstones, steps, sills 1½ inch per sup. ft....	2	0
Ditto do. 2 inch	2	3
Slate flagging planed 1 inch at 1s., 1½ inch	1	3
Ditto 2 inch	1	6
Ditto Oilstones or hones, per dozen	7	6
Ditto Finishing grindstones from 9 ins. diam, from...	10	0
Machine dressed Sydney flagging, 6 ins. thick, per sup. foot	1	6
Melbourne sawn bluestone, 2½ in. laid...	2	0

Labour only, each item.

	Spring Bay stone. £ s. d.	Sydney stone. £ s. d.
Ionic capital, Grecian or Roman, for 6 in. column (major diam.)	2 12 0	1 14 0
Ditto 9 in. do. do. ...	3 15 0	2 10 0
Ditto 12 in. do. do. ...	5 0 0	4 0 0
Ditto 18 in. do. do. ...	7 0 0	5 10 0
Ditto 24 in. do. do. ...	10 0 0	7 0 0

For quarter pilasters one half the above.

If enriched, add 20 per cent. to each item.

Modillions, Ionic, or plain moulded, 3 in. projection...	0 4 6	0 3 0
Ditto, 4½ in. do., plain moulded ...	0 6 0	0 4 0
Ditto, 6 in. do., do. ...	0 7 6	0 5 0
Cantilevers or trusses, 9 in. do. do.	0 10 6	0 4 0
Ditto, 12 in. do., do.	0 15 0	0 10 0

If enriched, for Corinthian composite, &c., add 50 per cent.

Corinthian or composite capital for 6 in. (major diam.) column ...	4 10 0	3 0 0
9 in. do. do. ...	7 10 0	5 0 0
12 in. do. do. ...	12 0 0	8 0 0
18 in. do. do. ...	16 0 0	12 0 0
24 in. do. do. ...	20 0 0	15 0 0

For quarter pilasters one half the above.

Pateræ or rosette (rich), 4 in. diam.	0 7 6	0 5 0
Ditto 6 in. do.	0 9 0	0 6 0
Ditto 9 in. do.	0 15 0	0 10 0
Centre flower (rich) 12 in. diam.	1 2 6	0 15 0
Ditto, 18 in. do. ...	1 17 6	1 5 0
Ditto, 24 in, do. ...	2 15 0	1 17 0
Mask or head, 4 in.	0 9 0	0 6 0
Ditto, 6 in.	0 18 0	0 12 0
Ditto, 9 in.	1 4 0	0 16 0
Ditto, 12 in.	1 10 0	1 0 0
Ditto, 15 in.	1 17 6	1 5 0

	Spring Bay stone.		Sydney stone	
	s.	*d.*	*s.*	*d.*
Acanthus leaf, 4 ins. long	4	0	6	0
Ditto, 6 in. do.	6	0	9	0
Ditto, 9 in. do.	8	0	12	0
Ditto, 12 in. do.	10	0	15	0
Lotus leaves, one half the above.				
Oak or laurel wreath, 6 in. diam. ...	10	0	15	0
Ditto do. 9 in. do. ...	12	0	18	0
Ditto do. 12 in. do. ...	16	0	24	0
Per foot super.				
Oak leaf and acorn frieze, with leaves 2 in. long	18	0	27	0
Ditto do. 4 in. do	14	0	21	0
Per foot run.				
Egg and dart moulding $1\frac{1}{2}$ in. girt ...	3	0	4	6
Ditto do. 2 in. do. ...	3	6	5	3
Ditto do. 3 in. do. ...	4	0	6	0
Ditto do. 4 in. do. ...	4	6	6	9
Rope or cable moulding 2 in. do. ...	2	0	3	0
Ditto do. 3 in. do. ...	3	0	4	6
Guillochis moulding, single, 3 ins. circles	4	0	6	0
Ditto 4 inches ditto	5	0	7	6
Ditto 6 inches do.	6	0	9	0

Ditto enriched, add 50 per cent.

N.B.—The whole of the above items are presumed to be prepared by the stonecutter as required. The above prices are for the carving only,

STONE CARVING.—If any of the above items are required in Darley, Barrabool Hills, or Oamaru free stone, the time required will be about one half that given for Spring Bay stone, but for bluestone or marble, about double.

Stone Carvers, 1s. 6d. per hour.

WOOD CARVING.—The cost of carving in cedar is almost the same as in Sydney freestone.

Carving in Blackwood the same as for Spring Bay stone.

Clear Pine Carving, about the same as for Oamaru freestone or two-thirds the cost of carving Spring Bay freestone.

Stone and Wood Carvers charge from 1s. 6d. per hour upwards, according to demand.

Labour only, per rod, reduced.

	£	s.	d.
Brickwork in cesspools or wells laid dry, including scaffolding ... ... from £3 5 0 to	3	15	0
Add if old bricks are used	0	10	0
Brickwork in mortar, including scaffolding for $4\frac{1}{2}$ inch walls ... ... £5 to	6	0	0
Ditto, do. for 9 inch walls ... ... £4 10s.	5	10	0
Ditto, for $1\frac{1}{2}$ brick walls ... ... £4 to	5	0	0
Ditto, for walls 2 or more bricks thick... £3 15s.	4	10	0
Add if worked fair on both sides	0	10	0
Labour only in brickwork in cement, including scaffolding	7	0	0
Taking down brickwork, clearing and stacking bricks ... ... from £1 10 0 to	2	0	0
Add for mortar, cement or bricks, as per estimate.			

HOOP IRON.—Per lineal foot, used for bonding, &c.

WEIGHT OF AT DIFFERENT WIDTHS AND THICKNESSES, BY B. W. G.

Mark of No.	Weight in lbs.	Width in inches.	Mark of No.	Weight in lbs.	Width in inches.
13	0.62	2	16(1-16th)	0.26	$1\frac{1}{4}$
14	0.47	$1\frac{3}{4}$	17	0.21	$1\frac{1}{8}$
15	0.36	$1\frac{1}{2}$	18	0.16	1
15	0.34	$1\frac{3}{8}$	19	0.12	$0\frac{7}{8}$

To find the value of a rod of Brickwork.

	£	s.	d.
4,080 to 4,400 bricks, delivered, at per thousand			
18 bushels of stone or roche lime, at per bushel			
Three loads of sand, 18 bushels, per load			
One and a half loads, or 3 hogsheads of water			
lbs. hoop iron (if required) as per table			
"Labour only," as above...			
Cost price per rod			
Add per cent. profit			
Contractor's price ... ... £			

Table showing the value from One, to Two Hundred and Seventy-two Feet of reduced Brick Work, from £3 to £12 per Rod.

Feet.	At £3 per Rod.			At £4 per Rod.			At £6 per Rod.			At £8 per Rod.			At £10 per Rod.			At £12 per Rod.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1	0	0	2½	0	0	3½	0	0	5	0	0	7	0	0	9	0	0	10½
2	0	0	5	0	0	7	0	0	10½	0	1	2	0	1	5½	0	1	9
3	0	0	8	0	0	10½	0	1	4	0	1	9	0	2	2	0	2	7½
4	0	0	11	0	1	2	0	1	9	0	2	4	0	2	11	0	3	6
5	0	1	1	0	1	5½	0	2	2	0	2	11	0	3	8	0	4	5
6	0	1	4	0	1	9	0	2	8	0	3	6	0	4	5	0	5	3½
7	0	1	7	0	2	1	0	3	1	0	4	1	0	5	2	0	6	2
8	0	1	9	0	2	4	0	3	6	0	4	8½	0	5	10½	0	7	0½
9	0	2	0	0	2	8	0	3	11½	0	5	3½	0	6	7	0	7	11
10	0	2	3	0	2	11	0	4	5	0	5	10½	0	7	4	0	8	10
15	0	3	4	0	4	5	0	6	7	0	8	10	0	11	0	0	13	3
20	0	4	5	0	5	10½	0	8	10	0	11	9	0	14	8½	0	17	8
25	0	5	6	0	7	4	0	11	0	0	14	8½	0	18	4½	1	2	0½
30	0	6	7	0	8	10	0	13	3	0	17	8	1	2	1	1	6	6
40	0	8	10	0	11	9	0	17	8	1	3	6	1	9	5	1	15	3½
50	0	11	0	0	14	8½	1	2	1	1	9	5	1	16	9	2	4	1
60	0	13	3	0	17	8	1	6	5½	1	15	3½	2	4	1	2	12	11
70	0	15	5	1	0	7	1	10	10½	2	1	2	2	11	5½	3	1	9
80	0	17	8	1	3	6	1	15	3½	2	7	0½	2	18	10	3	10	7
90	0	19	10	1	6	5½	1	19	8½	2	12	11	3	6	2	3	19	5
100	1	2	1	1	9	5	2	4	1	2	18	10	3	13	6	4	8	2
110	1	4	3	1	12	4	2	8	6	3	4	8	4	0	10½	4	17	0½
120	1	6	6	1	15	3½	2	12	11	3	10	7	4	8	3	5	5	10½
130	1	8	8	1	18	3	2	17	4	3	16	5½	4	15	7	5	14	8½
140	1	10	11	2	1	2	3	1	9	4	2	4	5	2	11	6	3	6
150	1	13	1	2	4	1	3	6	2	4	8	3	5	10	3½	6	12	4
160	1	15	4	2	7	0½	3	10	7	4	14	1	5	17	8	7	1	2
170	1	17	6	2	10	0	3	15	0	5	0	0	6	5	0	7	10	0
180	1	19	9	2	12	11	3	19	5	5	5	10½	6	12	4	7	18	10
190	2	1	11	2	15	10½	4	3	10	5	11	9	6	19	8	8	7	8
200	2	4	1	2	18	10	4	8	3	5	17	8	7	7	0½	8	16	5½
210	2	6	4	3	1	9	4	12	8	6	3	6	7	14	5	9	5	3½
220	2	8	6	3	4	8½	4	17	0½	6	9	5	8	1	9	9	14	1
230	2	10	9	3	7	8	5	1	5½	6	15	3½	8	9	1	10	2	11
240	2	12	11	3	10	7	5	5	10½	7	1	2	8	16	5½	10	11	9
250	2	15	2	3	13	6	5	10	3½	7	7	0½	9	3	10	11	0	7
260	2	17	4	3	16	5½	5	14	8½	7	12	11	9	11	2	11	9	5
270	2	19	7	3	19	5	5	19	1½	7	18	10	9	18	6	11	18	3
272	3	0	0	4	0	0	6	0	0	8	0	0	10	0	0	12	0	0

By adding, halving, or doubling, as may be requisite, any quantity or value can be obtained from the above Table.

TABLE SHOWING THE NUMBER OF BRICKS REQUIRED FOR WALLS *of all areas at* 4,080 *bricks per reduced rod.*

Area of wall.	Bricks thick and bricks required.				
	½-brick.	1 brick.	1½ brick.	2 bricks.	2½ bricks.
1	5	10	15	20	25
2	10	20	30	40	50
3	15	30	45	60	75
4	20	40	60	80	100
5	25	50	75	100	125
6	30	60	90	120	150
7	35	70	105	140	175
8	40	80	120	160	200
9	45	90	135	180	225
10	50	100	150	200	250
20	100	200	300	400	500
30	150	300	450	600	750
40	200	400	600	800	1,000
50	250	500	750	1,000	1,250
60	300	600	900	1,200	1,500
70	350	700	1,050	1,400	1,750
80	400	800	1,200	1,600	2,000
90	450	900	1,350	1,800	2,250
100	500	1,000	1,500	2,000	2,500
200	1,000	2,000	3,000	4,000	5,000
300	1,500	3,000	4,500	6,000	7,500
400	2,000	4,000	6,000	8,000	10,000
500	2,500	5,000	7,500	10,000	12,500
600	3,000	6,000	9,000	12,000	15,000
700	3,500	7,000	10,500	14,000	17,000
800	4,000	8,000	12,000	16,000	20,000
900	4,500	9,000	13,500	18,000	22,500
1,000	5,000	10,000	15,000	20,000	25,000
2,000	10,000	20,000	30,000	40,000	50,000
3,000	15,000	30,000	45,000	60,000	75,000
4,000	20,000	40,000	60,000	80,000	100,000
5,000	25,000	50,000	75,000	100,000	125,000
6,000	30,000	70,000	90,000	120,000	150,000
7,000	35,000	70,000	105,000	140,000	175,000
8,000	40,000	80,000	120,000	160,000	200,000
9,000	45,000	90,000	135,000	180,000	225,000
10,000	50,000	100,000	150,000	200,000	250,000
20,000	100,000	200,000	300,000	400,000	500,000
30,000	150,000	300,000	450,000	600,000	750,000
40,000	200,000	400 000	600,000	800,000	1,000,000
50,000	250,000	500,000	750,000	1,000,000	1,250,000

Cubical Contents and Cost of Plain Culverts in Mortar or Cement, at per lineal yard.

Internal diameter.	Thick. of rim.	C. feet, per yard lineal.	C. yds. per yd. lineal.	Cost at £4 per cube yard.	Internal diameter.	Thick. of rim.	C. feet, per yard lineal.	C. yds. per yd. lineal.	Cost at £4 per cube yard.
Ft. In.	In.	Ft. In.	Yd. Dec.	£ s. d.	Ft. In.	In.	Ft. In.	Yd. Dec.	£ s. d.
0 9	4½	3 11½	0·147	0 11 9	4 0	4½	15 5½	0·573	2 5 10
1 0	4½	4 10½	0·180	0 14 5	4 0	9	33 7	1·244	4 19 6
1 0	9	12 4½	0·458	1 16 8	4 0	13½	54 4	2·013	8 1 0
1 3	4½	5 9	0·213	0 17 0	4 6	4½	17 2½	0·638	2 11 0
1 3	9	14 1½	0·524	2 1 11	4 6	9	37 1½	1·374	5 9 11
1 6	4½	6 7½	0·245	0 19 7	4 6	13½	59 7½	2·209	8 16 9
1 6	9	15 10½	0·589	2 7 1	5 0	9	40 7½	1·505	6 0 5
1 9	4½	7 6	0·278	1 2 3	5 0	13½	64 11	2·405	9 12 5
1 9	9	17 8	0·654	2 12 4	5 0	18	91 11	3·403	13 12 3
2 0	4½	8 5	0·311	1 4 11	5 6	9	44 2	1·636	6 10 11
2 0	9	19 5	0·720	2 17 7	5 6	13½	70 3	2·602	10 8 2
2 6	4½	10 2	0·376	1 10 1	5 6	18	98 11½	3·665	14 13 2
2 6	9	22 11½	0·851	3 8 1	6 0	9	47 8½	1·768	7 1 4
3 0	4½	11 11	0·442	1 15 4	6 0	13½	75 6½	2·798	11 3 10
3 0	9	26 6	0·982	3 18 7	6 0	18	106 0	3·927	15 14 2
3 0	13½	43 9	1·620	6 9 7	7 0	13½	86 2	3·191	12 15 3
3 6	4½	13 8	0·507	2 0 7	7 0	18	120 2	4·451	17 16 1
3 6	9	30 0½	1·113	4 9 0	8 0	18	134 3	4·974	19 17 11
3 6	13½	49 0½	1·816	7 5 3	8 0	22½	174 6	6·463	25 17 0

Bricks and mortar or cement will not properly combine unless the bricks are soaked with water immediately before being used. If this is done the work will never give way in the joints. The same strength may be obtained by watering dry walls before the mortar or cement is set, or partially so by grouting. When the saltpetre appears in the face of the wall, a perfect combination of the materials has taken place.

Moulded brickwork, built with moulded bricks at £6 per 1000, will cost only one half similar work in Sydney freestone, one third the cost of Hobart Town freestone, one seventh the cost of bluestone, and from one tenth to one twentieth the cost of similar work in granite.

LIME MORTAR, CEMENT MORTAR, AND CEMENT.

Difference in value per rod of brickwork.

	£	s.	d.
Lime Mortar.—			
Stone lime, 24 bushels at 2s.	2	8	0
Sand, 48 bushels or 2⅔ loads	0	6	6
	£2	14	6
Cement Mortar (Hydraulic).—			
Portland cement, 12 bushels or 3 casks	3	7	6
Stone lime, 24 bushels or 8 bags at 6s.	2	8	0
Sand, 36 bushels or 2 loads at 2s. 6d.	0	5	0
Extra labour in using part cement	0	14	0
	£6	14	6
Cement (mixed 1 to 1).—			
Portland cement, 36 bushels or 9 casks at 22s. 6d.	10	2	6
Sand, 36 bushels or 2 loads at 2s. 6d.	0	5	0
Extra labour in using all cement	1	4	0
	£11	11	6

Where the cement is not required to set quickly, the cement mortar might be generally used with a saving of at least £4 per rod.

Brickwork in cement mortar.—The brick wall of a gasholder 100 feet average diameter, 30 feet high and 3 bricks thick would contain about 71 rods, which at £4 per rod would amount to a saving of £284 as compared with brickwork in cement.

Half-brick partition walls, 3 stories high, built with wet bricks and cement mortar well banded with hoop iron were built in Sydney in 1865.

Hydraulic lime.—Hobart Town stone lime is slightly hydraulic, it is the best of the Australian stone limes, and is occasionally used in Melbourne.

Where cement is not obtainable a cheap though inferior substitute may be made by using powdered lime with one-third fine brick dust.

One rod of Brickwork contains

272 feet super, of 1½ brick or 13½ inches in thickness.

Or 11½ cubic yards or 306 cubic feet.

BRICKS—4,356 best bricks in mortar laid four courses to the foot.

4,080 bricks if 4 courses to 13 inches, or ordinary Brickwork.

MORTAR—36 bush. of sharp sand and 36 bush. of cement or lime.

Or 48 bushels of sharp sand and 6 barrels Portland cement.

BOND—71 lbs. iron hoop No. 16, at 272 lineal feet per rod.

Brickwork when built contains about as many cubic feet of cement or roche lime mortar as it took bushels of sand and cement or roche lime to make the mortar used.

WEIGHT.—The Australian bricks generally weigh from 6½ to 7 lbs. each, or at least 3 tons per thousand, say 13 tons per rod, the mortar weighing about 3 tons at 24 cubic feet per ton. The rod of brickwork may therefore be considered to weigh about 16 tons, or about 30 cwt. per cubic yard.

BRICKWORK.

Labour only, per cubic yard.

Cost of labor only equal to wages of bricklayer and labourer per hour multiplied by time given.	Hrs. 12ths or s. & d. at 1s. per hour.
Brickwork in bridges, abutments, &c., not less than 1½ brick thick	4 0
Arches, culverts, or Skew bridges	5 0
Coppers, ovens, furnaces, cupolas, &c.	6 0
Factory chimneys, square, any height	10 0
Do. circular, do. or church towers	12 6
Do. octagon, do. or church spires	15 0

If in cement add 20 per cent. to these items.

Materials Required for a Cubic Yard of Brickwork.

384 bricks 4 courses to the foot.

352 bricks 4 courses to 13 inches.

3 bushels of cement or stone lime and 3 of sand, with joints averaging ⅜ inch thick.

2 bushels cement or stone lime and 2 of sand, with joints averaging ¼ inch thick.

2 bushels cement or stone lime and 1 of sand, with joints 3-16th inch thick.

CULVERTS.

Required the cost of a cubic yard of brickwork (in cement) in barrel drains or culverts. All materials.

	£	s.	d.
384 patent pressed bricks at £4 per 1,000 delivered	1	10	8
Mortar.—3 bushels of Portland cement, delivered, at 6s ...	0	18	0
4 bushels of sharp sand, delivered at 3d	0	1	0
Labour.—Bricklayer and labourer 6 hours, including fixing and removing centering, 2s. 6d. per hour ...	0	15	0
Add for profit and use of centering	0	16	4
Builder's price per cubic yard	£4	0	0

N.B.—The price of brickwork in cement, per cubic yard, may vary from £3 to £4 at present rates, even with colonial bricks, and with English fire bricks at £12 per 1,000, the price of first-class work would be £6 per cubic yard. The above example shows how the price may be obtained at all rates for both labour and materials. For further information see page 35.

GAUGED ARCHES.

Labour, putty, and centering, per foot super.

	Cut & Set.		Cut only.	
	s.	*d.*	*s.*	*d.*
Camber. or semi arches, rubbed and set in putty	1	8	1	0
Elliptical, or Gothic ditto	2	0	1	3
Ditto, circular on plan	3	0	2	0
Straight mouldings or cornice	1	6	1	0
Circular do.	3	0	2	0

Add cost of rubbers for "All materials."

POINTING.

"All materials" per yard super.	*s.*	*d.*
Flat joint or white pointing, including raking out and scaffolding	2	0
Ditto, to chimney shafts, do —	3	0
Tuck pointing to new work and scaffolding ...	4	0
Ditto, to old work, including raking out, cleaning, staining, and scaffolding	6	0

BRICK-NOGGING.

	Lime Mortar.		Labour.	
	s.	*d.*	*s.*	*d.*
Brick on edge	0	6	0	8
Ditto, flat	0	9	0	1
If done in cement, add on the edge ...	0	2	0	4
Ditto, on the flat	0	3	0	6

In measuring brick-nogging to partitions, &c., the quartering is not deducted.

45 bricks flat, or 30 on edge, required per yard.

Paving.

Per yard super.	Lime or Cement.		Labour.	
	s.	*d.*	*s.*	*d.*
Bricks flat in sand, laid straight or herring bone	0	3	0	8
Ditto, on edge, in ditto	0	4	0	11
Ditto, flat, in mortar and jointed do. ...	0	7	1	0
Ditto, on edge, do	0	10	1	5
If laid flat in cement, add on mortar ...	0	4	0	3
Ditto, on the edge	0	6	0	4½
9, 10, or 12 inch tiles, in mortar ...	0	6	1	0
3 inch layer lime concrete	0	6	0	3
Ditto do. cement do.	1	0	0	6

N.B.—34 bricks paved flat, 50 on edge, 5¾-fifteen-inch, 9 twelve-inch, 13 ten-inch, or 16 nine-inch tiles, will pave one yard.

The concrete forms a foundation to the brick paving and prevents it giving way or partially sinking.

Sundries.

Per foot run.	*s.*	*d.*
Cuttings to 9 inch rakes or ramps	0	2
Ditto 14 inch do. do.	0	3
Ditto 18 inch do. do.	0	4
Chamfering angles	0	2
Cement filleting all materials	0	3
Waterproof course slates and cement, do.	0	6

Each.	Materials.		Labour.	
	s.	*d.*	*s.*	*d.*
Bedding and pointing sash and door frames...	0	4	1	6
Ditto large or Venetian frames ...	0	6	2	6
Chimney-pots fixed, large or first size, in cement, to new buildings	10	0	1	6
Ditto do., second size do.	8	0	1	4
Ditto do., third size, do.	6	0	1	2
Bedding hearths, including ½-brick trimmers, or slates and iron bars... ...	4	0	3	0
Setting register stoves complete ...	0	0	3	0
Ditto small grates	5	0	10	0
Ditto colonial ovens	8	0	10	0
Building brick hearth and hobs ...	6	0	8	0

In measuring brickwork all flues are to be measured as solid work below the roof, but above the roof (for labour only) the girt is taken by the thickness of brickwork round flue, and this multiplied by the height, including projections which are girted. Piers, pilasters, quoins, &c., are also girted, for labour only.

The shortest method of reducing cubic feet to the standard thickness of 1½ brick, is to deduct one-ninth, or multiply by 8 and divide by 9.

To reduce 1 brick to 1½ brick walls, deduct one-third from the given area.

In measuring height of walls, the wall-plate is included for setting or allowed for separately.

Doorways and other openings more than 36 super. feet each are deducted for labour only.

"Labour only" is understood to include the erection of necessary scaffolding, centering, &c., but not providing it.

'Lime (or cement) and mortar" includes scaffolding, centering, moulds, templates, and all materials except bricks.

"All materials" includes lime and mortar and bricks, when all openings are deducted in the measurement.

Brick walls if classified together according to their thickness, admit of a more equitable estimate being made than by the common method.

In buildings, brickwork is generally let by the rod of 272¼ super. feet reduced or 306 cubic feet; but for factory chimneys, bridges, culverts, &c., the cubic yard is used.

HOLLOW BRICKWORK.—Walls are sometimes built hollow with ordinary bricks, and a considerable saving of material may in this way be effected in the construction of 9, 11, 12, and 14 inch walls, but there is an extra amount of labour.

CARTAGE.

	s.	*d.*
Carting bricks, including loading and unloading, one mile per 1,000	7	6
Ditto, add for each mile beyond, per 1,000	1	6
Carting slates, sand, lime, or rubbish, per load, for one mile, including loading and unloading ...	3	0
Ditto, add for each mile beyond, per load	0	8
Carting scaffolding, per load, for one mile, including loading and unloading	3	6
Ditto for each mile beyond first mile, per load ...	0	9

	£	s.	d.
White bricks delivd. in Sydney, £2 10s. to	3	10	0
Patent pressed do. delivered in Melbourne ...	5	10	0
Red or white bricks do.	2	10	0
Country common bricks ... ... £2 to	2	10	0
Firebricks, imported, at Melbourne ... £11 to	12	0	0
Ditto do. at Sydney...	10	0	0
Colonial firebricks do. ... ... £5 to	6	0	0
Ditto do. in Melbourne... ... £6 to	8	0	0
Splayed, chamfered, or moulded bricks for columns, chimneys or wells, or gauged arch-bricks in Melbourne ... ... £3 to	3	5	0
Colonial firelumps in Melbourne or Sydney p. s. ft. 1 in. thick	0	0	10
English do. do. do. ...	0	1	3
English fireclay do. per ton ...	12	0	0
Victorian do. do. do. ...	7	0	0
Flooring Tiles 12 x 12 in Melbourne per 100	2	10	0
Ditto do. 9 x 9 do. do....	1	5	0
Ditto do. 6 x 6 do. do....	0	18	0
4 inch surface drain, per foot	0	0	4½
6 inch do.	0	0	6
Chimney pots, clay octagon	0	7	6
Ditto do., small	0	5	0
Ditto, round	0	4	0
Damp proof bricks, 9 x 9 each	0	0	6
Ditto do., 9 x 4½	0	0	4½
Air bricks, per dozen	0	4	6
Oven tiles, 12 x 12 x 2 each	0	1	0
Ditto, 9 x 9 x 2	0	0	8
Shell lime, for inside work, per bag	0	3	0
Geelong roche lime, for outside work, do. ...	0	5	3
Lime (Marulan stone) per bag	0	6	6
Ditto (Manning River)	0	5	6
Paving tiles, 12 x 6 x 2½ (Sydney), per s. ft.	0	0	6
Surface gutter, ½ round, flat bottom, per lin. foot	0	0	6
Fire clay in Sydney, per ton	2	0	0
Portland cement, best brands, per cask of 4 bushels (90 lbs. per bushel)	1	0	0
Clean sharp sand, within a mile, filling and cartage only, per load	0	2	6

Melbourne prices per yard super.

	s.	d.
Pure Seyssel, or rock asphalte, one inch thick, (about 90 lbs.) including foundation, 4 inches, of bluestone metal or concrete	12	0
Tar concrete or composition pavement, viz., $2\frac{1}{2}$ ins. of 2 inch metal foundation, 1 inch coarse and $\frac{1}{2}$ inch fine screenings, the whole mixed with tar and dusted over with bluestone dust, 2s. 6d. to	3	3
Bluestone (machine broken) metal, 2 inch gauge, p. cu. yard	5	0

Shepherd's patent composition (asphalte) pavement	2 in.	3 in.	4 in.	5 in.	6 in.
	s. d.	s. d.	s. d.	s. d.	s. d.
	3 0	3 6	4 0	4 6	5 0

SEYSSEL asphalte is made from a natural calcareous bitumen, found at Seyssel, near Pyrimont, department of l'Aix; and according to Claridge's specification of his Patent, obtained in Nov. 1837, "contains 90 parts of carbonate of lime to about 10 parts of bitumen;" this is improved by the addition of tar or pitch by the Patentee. The calcareous asphalte rock of Val de Travers, in the Canton of Neufchâtel, in Normandy, contains 20 per cent. of bitumen. Bitumen, naturally combined with calcareous earth, forms a compact slightly elastic substance which is as durable as granite, but no artificial mixture of coal tar and calcareous earth, carbonate of lime, or chalk, has ever been produced at all approaching the natural asphaltes in durability. This is partly due to the difficulty of imitating the natural combination in mixing, but chiefly to the fact of the natural bitumen, being a kind of mineral tar, which will sustain 170 deg. of heat without injury, whereas asphalte made from coal (vegetable) tar, becomes soft at 115 deg. of heat, and was therefore, not suitable to this climate, as it became softened by the heat of summer, and was easily cracked and broken up. *See article Bitumen in Dr. Ure's Dictionary.*

TAR CONCRETE or composition pavement is now successfully made by substituting bluestone for carbonate of lime, it is really a *concrete* in which tar forms the cementing or binding medium. It is largely used in Melbourne for public footpaths, yards, &c., and has also lately put in an appearance in Sydney.

At Melbourne Timber Yards.

	Per 100 ft. sup. s.	d.	£	s.	d.
Match boarding, Baltic, Scotch prepared, wrought T. & G., 6 in. x $\frac{1}{2}$ in. .	16	0 to	0	18	0
Flooring, do., 6 in. x $\frac{3}{4}$ in. .	20	0	1	4	0
Ditto, do., 6 in. x $\frac{7}{8}$ in. .	22	0	1	6	0
Ditto, do., 6 in. x $1\frac{1}{8}$ in.	26	0	1	10	0
Ditto, red pine, do., 6 in. x $1\frac{1}{8}$ in.	28	0	1	14	0
Ditto, pitch pine, 1 in. thick	30	0	1	14	0
Ditto, do., $1\frac{1}{4}$ do.	38	0	2	4	0
Amer. white pine T. & G., 1 in. thick	20	0	1	4	0
Slating battens, 2 x 1, 3 to a foot, red	10	0	0	14	0
Ditto, 3 x 1, do.	19	0	1	1	0
Weatherboards, Baltic deal.	16	0	1	0	0

	p. 100 ft. sup. 1 in. thick.				
Baltic red pine, sawn to sizes	24	0	1	10	9
Ditto, deals 9 x 3 at 7d. and 11 x 3 at 9d.					
Maryborough pine, sawn to sizes	20	0	1	5	0
Oregon pine, sawn to sizes	20	0	1	5	0
Amer. shelving, wrought face and edge	22	0	1	7	0
Ditto, clear pine, for joinery, &c.	32	0	1	16	0
Australian Kaurie pine, sawn to sizes	25	0	1	10	0
Ditto, blue gum or stringy bark, sawn to sizes	14	0	0	18	0
Ditto, do. 3 x 2 to 8 x 3, market cut	11	0	0	13	0
Ditto, planking.	13	0	0	16	0

Per sup. foot.

	s.	d.
Sashes, glazed with sheet glass, (6 lights each), complete, viz :—		
$1\frac{1}{4}$ in. sashes for openings, from 2.1 x 3.6 to 2.7 x 4.10	0	10

Frames are not often made for $1\frac{1}{4}$ in. sashes, which are generally fixed in the studs of wooden buildings.

	s.	d.
$1\frac{1}{2}$ in. sashes, for frames from 2.10 x 4.6 to 3.4 x 6.6, *in the clear or* 50 *pairs made to order* ...	11	0
Ditto, machine made, to order, and glazed with 16 oz. sheet glass, for 12 pairs	1	1
Ditto, do. 6 pairs	1	2
$1\frac{3}{4}$ in. sashes, ditto, for 50 pairs	1	0
Ditto 12 pairs	1	2
Ditto, do. 6 pairs	1	3
Box frames for ditto, double hung complete, $1\frac{1}{2}$ times the price of the sashes.		
2 in. sashes for frames, from 2.10 x 5.6 to 3.4 x 6.6, *in clear or if* 50 *pairs made to order*	1	2
Ditto, machine made, to order, and glazed as above, for 12 pairs	1	3
Ditto do. 6 pairs	1	4
Box frames for ditto, double hung complete, $1\frac{1}{3}$ times the price of the sashes.		
If the sashes made to order are required without glass, deduct 3d. to 4d. per sup. foot.		
Cedar (N. S. Wales), $\frac{1}{2}$ inch up to 20 ins. wide ...	0	4
Ditto, do. $\frac{3}{4}$ inch do. ...	0	$4\frac{1}{2}$
Ditto, do. 1 inch do. ...	0	5
Huon pine (Tasmania), for joinery, same price as cedar.		

American Doors.	From.		To.	
Each.	s.	d.	s.	d.
6.6 x 2.6 x $1\frac{1}{4}$ with raised panels ...	10	0	12	0
Do. do. double moulded ...	12	0	15	0
Do. do. $1\frac{3}{8}$ do.	14	0	16	0
Do. do. $1\frac{1}{2}$ do.	14	0	17	0
6.8 x 2.8 x $1\frac{1}{4}$ do.	13	0	16	0
Do. do. $1\frac{3}{8}$ do.	16	0	18	0
Do. do. $1\frac{1}{2}$ do.	16	6	19	0
6.10 x 2.10 x $1\frac{1}{3}$ do.	17	0	20	0
Do. do. $1\frac{3}{4}$ do.	19	0	23	0
Do. do. 2 do.	20	0	25	0
7.0 x 3.0 x $1\frac{1}{2}$ do.	18	0	20	0
Do. do. $1\frac{3}{4}$ do.	21	0	25	0
Do. do. 2 do.	22	0	27	0

	From. s.	d.	To. s.	d.
SASH DOORS, 6.6 x 2.6 x 1¼ to 1½ in.	17	0	20	0
Ditto, 6.8 x 2.8 x 1⅜ or 1½ in.	19	0	22	0
Ditto, 6.10 x 2.10 x 1½ or 1¾ in.	21	0	24	0
Ditto, 7.0 x 3.0 do. ...	22	0	25	0

AMERICAN PINE—	Per 100 lin. ft. £	s.	d.	Per lin. ft, s.	d.
MOULDING, O.G., 1 x ⅜	0	5	0	0	0¾
Ditto, 1¼ x ½	0	6	0	0	0¾
Ditto, 1½ x ⅝	0	7	0	0	1
Ditto, 2 x ⅞	0	8	0	0	1
Ditto, 2½ x ⅞	0	9	0	0	1¼
Ditto, 3 x ⅞	0	10	6	0	1½
ARCHITRAVES, 4 x 1 sin. faced ...	0	15	0	0	2
Ditto, 5 x 1¼	0	18	0	0	2¼
Ditto, 5 x 1½ dou. faced	1	2	0	0	2¾
Ditto, 6 x 1½, do....	2	1	0	0	5
Ditto, 7 x 1½, do....	2	9	0	0	6
SKIRTINGS—					
Single faced, 5 x ⅝ moulded ...	0	13	0	0	1¾
Ditto, 6 x ¾ do. ...	0	14	0	0	1¾
Ditto, 7 x ¾ do. ...	0	17	0	0	2
Ditto, 9 x ¾ do. ...	1	0	0	0	2½
Ditto, 9 x 1 do. ...	1	4	0	0	3
Double faced, 12 x 1¼	2	9	0	0	6
Ditto, 15 x 1½ do. ...	4	0	0	0	10

CEDAR MANTLE-PIECES, ...	from £2 to £3	0	0
LATHS, American deal, sawn, 4 ft., per 1,000	1	8	0
Ditto, 4 ft. 6 in. do.	1	15	0
Ditto, Australian sawn, 4 ft. ... do.	1	2	0
Ditto, 4½ ft. ... do.	1	5	0
Ditto, split Baltic, 4 feet do.	1	13	0
Ditto, do. 4½ feet do.	1	18	0
PALING, V.D.L., 5 ft., best box paling, per 100	0	17	0
Ditto, 6 ft., do. do. do.	1	5	0
Ditto, 5 ft., market or ordinary ... do.	0	15	0
SHINGLES, Victorian, 28 x 4 per 100 ...	0	7	6
POSTS AND RAILS (one-third or one-fourth posts), . per 100	3	8	0

N.B.—The above are the highest ruling prices.

TABLE

Shewing the Price per lineal foot for Scantlings of Timber, from 2s. 6d. to 6s. per foot cube, exclusive of sawing, with the corresponding price per 100 sup. feet one inch thick.

Scantling in Inches.	Per foot cube exclusive of sawing.															
	2s. 6d or 20/10 per 100.		3s. 0d. or 25/ per 100.		3s. 6d or 29/2 per 100.		4s. 0d. or 33/4 per 100.		4s. 6d. or 37/6 per 100.		5s. 0d. or 41/8 per 100.		5s. 6d. or 45/10 per 100.		6s. 0d. or 50/ per 100.	
	s.	d.	s.	d	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
2 by 2	0	1	0	1	0	1¼	0	1½	0	1½	0	1¾	0	2	0	2¼
2½	0	1¼	0	1¼	0	1½	0	1¾	0	2	0	2¼	0	2½	0	2½
3	0	1¼	0	1½	0	1¾	0	2	0	2¼	0	2½	0	2¾	0	3
3½	0	1½	0	1¾	0	2¼	0	2½	0	2¾	0	3	0	3¼	0	3½
4	0	1¾	0	2	0	2½	0	2¾	0	3	0	3½	0	3¾	0	4
4½	0	2	0	2¼	0	2¾	0	3	0	3½	0	3¾	0	4¼	0	4½
5	0	2¼	0	2½	0	3	0	3½	0	4	0	4¼	0	4¾	0	5
5½	0	2½	0	2¾	0	3¼	0	3¾	0	4¼	0	4¾	0	5	0	5½
6	0	2½	0	3	0	3½	0	4	0	4½	0	5	0	5½	0	6
6½	0	2¾	0	3¼	0	4	0	4½	0	5	0	5½	0	6	0	6½
7	0	3	0	3½	0	4¼	0	4¾	0	5¼	0	6	0	6½	0	7
7½	0	3¼	0	3¾	0	4½	0	5	0	5¾	0	6¼	0	7	0	7½
8	0	3½	0	4	0	4¾	0	5½	0	6	0	6¾	0	7½	0	8
8½	0	3¾	0	4¼	0	5	0	5¾	0	6½	0	7¼	0	8	0	8½
9	0	3¾	0	4½	0	5¼	0	6	0	6¾	0	7½	0	8¼	0	9
9½	0	4	0	4¾	0	5¾	0	6½	0	7¼	0	8	0	8¾	0	9½
10	0	4¼	0	5	0	6	0	6¾	0	7½	0	8¼	0	9¼	0	10
10½	0	4½	0	5¼	0	6¼	0	7	0	7¾	0	9	0	9¾	0	10½
11	0	4¾	0	5½	0	6½	0	7¼	0	8¼	0	9¼	0	10	0	11
11½	0	5	0	5¾	0	6¾	0	7¾	0	8¾	0	9¾	0	10½	0	11½
12	0	5	0	6	0	7	0	8	0	9	0	10	0	11	1	0
3 by 3	0	2	0	2¼	0	2¾	0	3	0	3½	0	3¾	0	4¼	0	4½
3½	0	2¼	0	2¾	0	3¼	0	3½	0	4	0	4½	0	4¾	0	5¼
4	0	2½	0	3	0	3½	0	4	0	4½	0	5	0	5½	0	6
4½	0	3	0	3¼	0	4	0	4½	0	5¼	0	5¾	0	6¼	0	6¾
5	0	3¼	0	3¾	0	4½	0	5	0	5¾	0	6¼	0	7	0	7½
5½	0	3½	0	4¼	0	5	0	5½	0	6¼	0	7	0	7¾	0	8¼
6	0	3¾	0	4½	0	5¼	0	6	0	6¾	0	7½	0	8¼	0	9
6½	0	4¼	0	5	0	5¾	0	6½	0	7½	0	8¼	0	9	0	10
7	0	4½	0	5¼	0	6¼	0	7	0	8	0	8¾	0	9¾	0	10½
7½	0	4¾	0	5¾	0	6¾	0	7½	0	8½	0	9½	0	10½	0	11½
8	0	5	0	6	0	7	0	8	0	9	0	10	0	11	1	0
8½	0	5½	0	6½	0	7½	0	8½	0	9¾	0	10¾	0	11¾	1	1

TABLE—*continued.*

Shewing the price per lineal foot for Scantlings of Timber, from 2s. 6d. to 6s. per foot cube.

Scantling in Inches.	Per foot cube, or per 100, exclusive of sawing.													
	2s. 6d. or 20/10 per 100.		3s. 0d. or 25/ per 100.		3s. 6d. or 29/2 per 100.		4s. 0d. or 33/4 per 100.		4s. 6d. or 37/6 per 100.		5s. 0d. or 41/8 per 100.		5s. 6d. or 45/10 per 100.		6s. 0d. or 50/ per 100.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
3 by 9	0	5¾	0	6¾	0	8	0	9	0	10¼	0	11¼	1	0½	1	1½
9½	0	6	0	7¼	0	8½	0	9½	0	10¾	1	0	1	1¼	1	2½
10	0	6¼	0	7½	0	8¾	0	10	0	11¼	1	0½	1	1¾	1	3
10½	0	6¾	0	8	0	9¼	0	10½	1	0	1	1¼	1	2¾	1	4
11	0	7	0	8¼	0	9¾	0	11	1	0½	1	1¾	1	3¼	1	4½
11½	0	7¼	0	8¾	0	10¼	0	11½	1	1	1	2½	1	4	1	5¾
12	0	7½	0	9	0	10½	1	0	1	1½	1	3	1	4½	1	6
4 by 4	0	3½	0	4	0	4¾	0	5½	0	6	0	6¾	0	7½	0	8
4½	0	4	0	4½	0	5½	0	6¼	0	6¾	0	7¾	0	8½	0	9
5	0	4¼	0	5	0	6	0	6¾	0	7½	0	8¼	0	9¼	0	10
5½	0	4¾	0	5½	0	6½	0	7½	0	8¼	0	9¼	0	10¼	0	11
6	0	5	0	6	0	7	0	8	0	9	0	10	0	11	1	0
6½	0	5½	0	6½	0	7¾	0	8¾	0	9¾	0	11	1	0	1	1
7	0	6	0	7	0	8¼	0	9½	0	10½	0	11¾	1	1	1	2
7½	0	6½	0	7½	0	9	0	10¼	0	11¼	1	0¾	1	2	1	3
8	0	6¾	0	8	0	9½	0	10¾	1	0	1	1½	1	3	1	4
8½	0	7¼	0	8½	0	10	0	11½	1	0½	1	2¼	1	3¾	1	5
9	0	7½	0	9	0	10½	1	0	1	1½	1	3	1	4½	1	6
9½	0	8	0	9½	0	11¼	1	0¾	1	2¼	1	4	1	5½	1	7
10	0	8½	0	10	0	11¾	1	1½	1	3	1	4¾	1	6½	1	8
10½	0	9	0	10½	1	0½	1	2¼	1	3½	1	5½	1	7½	1	9
11	0	9¼	0	11	1	1	1	2¾	1	4	1	6¼	1	8¼	1	10
11½	0	9¾	0	11½	1	1½	1	3½	1	5	1	7¼	1	9¼	1	11
12	0	10	1	0	1	2	1	4	1	6	1	8	1	10	2	0
5 by 5	0	5½	0	6½	0	7¾	0	8¾	0	10	0	11	1	0¼	1	1½
5½	0	6	0	7	0	8¼	0	9½	0	10¾	0	11¾	1	1	1	1¾
6	0	6¾	0	7½	0	8¾	0	10	0	11¼	1	0½	1	1¾	1	3
6½	0	7	0	8¼	0	9¾	0	11	1	0½	1	1¾	1	3¼	1	4¼
7	0	7½	0	8¾	0	10½	1	0	1	1½	1	3	1	4½	1	5¾
7½	0	8	0	9½	0	11¼	1	0¾	1	3	1	4	1	5½	1	6¾
8	0	8½	0	10	1	0	1	1½	1	4¼	1	5	1	6½	1	8
8½	0	9	0	10¾	1	0¾	1	2¼	1	4¾	1	6	1	7¾	1	9¼
9	0	9½	0	11¼	1	1¼	1	3	1	5	1	6¾	1	8¾	1	10½
9½	0	10	1	0	1	2½	1	4¼	1	6½	1	7¾	1	9½	1	11¾
10	0	10½	1	0½	1	3½	1	5½	1	7¾	1	9	1	11	2	1
10½	0	11	1	1¼	1	3¾	1	6	1	8¼	1	9¾	2	0¼	2	2½
11	0	11½	1	1¾	1	4	1	6¾	1	8¾	1	10¾	2	1¼	2	3½
12	1	0½	1	3	1	5½	1	8	1	10½	2	1	2	3½	2	6

TABLE,—*continued.*

Shewing the price per lineal foot for Scantlings of Timber, from 2s. 6d. to 6s. per cube foot.

Scantling in Inches.	Per foot cube, or per 100, exclusive of sawing.															
	2s. 6d. or 20/10 per 100.		3s. 0d. or 25/ per 100.		3s. 6d. or 29/2 per 100.		4s. 0d or 33/4 per 100.		4s. 6d. or 37/6 per 100.		5s. 0d. or 41/8 per 100.		5s. 6d. or 45/10 per 100.		6s 0d. or 50/ per 100.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
6 by 6	0	7½	0	9	0	10½	1	0	1	1½	1	3	1	4½	1	6
6½	0	8¼	0	9¾	0	11¼	1	1	1	2¾	1	4¼	1	6	1	7½
7	0	8¾	0	10½	1	0¼	1	2	1	3¾	1	5½	1	7¼	1	9
7½	0	9½	0	11¼	1	1¾	1	3	1	5	1	6¾	1	8¾	1	10½
8	0	9¾	1	0	1	2	1	4	1	6	1	8	1	10	2	0
8½	0	10½	1	0¾	1	3	1	5	1	7¼	1	9¼	1	11½	2	1½
9	0	11¼	1	1½	1	3¾	1	6	1	8¼	1	10½	2	0¾	2	3
9½	1	0	1	2¼	1	4¾	1	7	1	9½	1	11¾	2	2¼	2	4½
10	1	0½	1	3	1	5½	1	8	1	10½	2	1	2	3½	2	6
10½	1	1¼	1	3¾	1	6½	1	9	1	11¾	2	2¼	2	5	2	7½
11	1	1¾	1	4½	1	7¼	1	10	2	0¾	2	3½	2	6¼	2	9
11½	1	2½	1	5¼	1	8¼	1	11	2	2	2	4¾	2	7¾	2	10½
12	1	3	1	6	1	9	2	0	2	3	2	6	2	9	3	0
7 by 7	0	10¼	1	0¼	1	2½	1	4½	1	6½	1	8½	1	10½	2	0½
7½	0	11	1	1¼	1	3½	1	5¾	1	8	1	10	1	11¾	2	2½
8	0	11¾	1	2	1	4½	1	7	1	9¼	1	11½	2	1¾	2	4
8½	1	0½	1	3	1	5¼	1	8¼	1	10½	2	1½	2	3½	2	6
9	1	1¼	1	3¾	1	6¼	1	9¼	1	11¾	2	2¼	2	5	2	7½
9½	1	2	1	4¾	1	7¼	1	10½	2	1¼	2	3¾	2	6½	2	9½
10	1	2¾	1	5½	1	8½	1	11½	2	2½	2	5¼	2	8¼	2	11
10½	1	3½	1	6½	1	9½	2	0¾	2	3¾	2	6½	2	9¾	3	1
11	1	4	1	7¼	1	10½	2	1¾	2	5	2	8	2	11¼	3	2½
11½	1	4¾	1	8¼	1	11½	2	3	2	6½	2	9½	3	1	3	4½
12	1	5½	1	9¼	2	0½	2	4	2	7¼	2	11	3	2½	3	6½
8 by 8	1	1½	1	4	1	7	1	9½	2	0	2	3	2	6	2	8
8½	1	2¼	1	5	1	8	1	10¾	2	1½	2	4½	2	7½	2	10
9	1	3	1	6	1	9	2	0	2	3	2	6	2	9	3	0
9½	1	4	1	7	1	10¼	2	1½	2	4½	2	7½	2	11	3	2
10	1	4½	1	8	1	11½	2	2¾	2	6	2	9	3	0¾	3	4
10½	1	5½	1	9	2	0¾	2	4	2	7½	2	11	3	2½	3	6
11	1	6¼	1	10	2	1¾	2	5¼	2	9	3	0¾	3	4¼	3	8
11½	1	7½	1	11	2	3	2	6¾	2	10½	3	2½	3	6¼	3	10
12	1	8	2	0	2	4	2	8	3	0	3	4	3	8	4	0

TABLE—*continued*—

Shewing the price per lineal foot for scantlings of Timber, from 2s. 6d. to 6s. per cube foot.

Scantling in Inches.	Per foot cube, or per 100, exclusive of sawing.															
	2s. 6d. or 20/10 per 100.		3s. 0d. or 25/ per 100.		3s 6d. or 29/2 per 100.		4s 0d. or 33/4 per 100.		4s. 6d. or 37/6 per 100.		5s. 0d. or 41/8 per 100.		5s. 6d. or 45/10 per 100.		6s. 0d or 50/ per 100.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s	d.
9 by 9	1	4½	1	8¼	1	11½	2	2¾	2	6	2	9,	3	0¾	3	4½
9½	1	5½	1	9¼	2	1	2	4½	2	8	2	11¼	3	3¾	3	6¾
10	1	6¾	1	10½	2	2½	2	6	2	10	3	1½	3	5½	3	9
10½	1	7¾	1	11¾	2	3¾	2	7½	2	11¾	3	3½	3	7½	3	11½
11	1	8¾	2	0¾	2	5	2	9	3	1¼	3	5¼	3	9½	4	1½
11½	1	9¾	2	2	2	6¼	2	10½	3	3	3	7¼	3	11	4	4
12	1	10½	2	3	2	7½	3	0	3	4½	3	9	4	1½	4	6
10 by 10	1	10	2	1	2	7	2	11	3	3½	3	8	4	0½	4	2
10½	1	10½	2	2¼	2	7¾	3	0	3	4½	3	9	4	1½	4	4½
11	1	11	2	3½	2	8	3	0¾	3	5	3	9¾	4	2½	4	7
11½	2	0	2	5¼	2	9½	3	2½	3	7	4	0	4	4½	4	10½
12	2	1	2	6	2	11	3	4	3	9	4	2	4	7	5	0
11 by 11	2	1¼	2	6¼	2	11¼	3	4½	3	9½	4	2½	4	7½	5	1½
11½	2	2½	2	7¾	3	2	3	6¼	3	11½	4	4¾	4	10	5	3½
12	2	3½	2	9	3	2½	3	8	4	1½	4	7	5	0½	5	6

	s.	d.
SAWING (machine), deal per 100 sup. ft., ordinary cuts (up to 12 in. deep)...	4	0
Ditto, do., hardwood, do.	5	0
Ditto, do., deep cuts (more than 12 in. deep) ...	7	0
Ditto, circular (machine), for ornamental barge boards, palisading, &c., with outside curves not less than 3 in. diam., at per lin. foot, per inch thick ...	0	1
If with inner curves or curves less than 3 in. diam., per lin. foot, per inch thick	0	2

N.B.—The above prices are liable to slight fluctuations.

TABLE

Shewing the Price per lineal foot for Scantlings of Fir or Deal, Kaurie Pine, Mahogany, Australian hardwoods, &c. calculated from 6s. 6d. to 10s. per foot cube, including sawing, and "*labor and nails*" in fixing.

Inches.	Per foot cube, "All Materials."															
	6s. 6d.		7s. 0d.		7s. 6d.		8s. 0d.		8s. 6d.		9s 0d.		9s. 6d.		10s. 0d	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
2 by 2	0	2¼	0	2½	0	2½	0	2¾	0	3	0	3	0	3¼	0	3½
2½	0	2¾	0	3	0	3	0	3¼	0	3½	0	3¾	0	4	0	4¼
3	0	3¼	0	3½	0	3¾	0	4	0	4¼	0	4½	0	4¾	0	5
3½	0	4	0	4¼	0	4½	0	4½	0	5	0	5¼	0	5½	0	6
4	0	4½	0	5	0	5	0	5¼	0	5½	0	6	0	6¼	0	6¾
4½	0	5	0	5¼	0	5½	0	6	0	6½	0	6¾	0	7	0	7½
5	0	5½	0	6	0	6¼	0	6½	0	7	0	7½	0	8	0	8½
5½	0	6	0	6½	0	7	0	7¼	0	7¾	0	8¼	0	8¾	0	9¼
6	0	6½	0	7¼	0	7½	0	8	0	8½	0	9	0	9½	0	10
6½	0	7¼	0	7¾	0	8¼	0	8½	0	9	0	9¾	0	10½	0	11
7	0	7½	0	8¼	0	8¾	0	9¼	0	9¾	0	10½	0	11¼	0	11¾
7½	0	8¼	0	8¾	0	9½	0	10	0	10½	0	11¼	1	0	1	0½
8	0	8½	0	9	0	10	0	10½	0	11	1	0	1	0¾	1	1½
8½	0	9	0	9¾	0	10½	0	11¼	1	0	1	0¾	1	1½	1	2¼
9	0	9¾	0	10½	0	11¼	1	0	1	0¾	1	1½	1	2¼	1	3
9½	0	10¼	0	11	0	11¾	1	0⅓	1	1½	1	2¼	1	3	1	4
10	0	11	0	11½	1	0½	1	1⅓	1	2¼	1	3	1	3¾	1	4¾
10½	0	11½	1	0¼	1	1	1	2	1	3	1	3¾	1	4½	1	5½
11	1	0	1	0¾	1	1¾	1	2½	1	3½	1	4½	1	5½	1	6½
11½	1	0½	1	1½	1	2½	1	3¼	1	4¼	1	5¼	1	6¼	1	7¼
12	1	1	1	2	1	3	1	4	1	5	1	6	1	7	1	8
3 by 3	0	5	0	5¼	0	5½	0	6	0	6½	0	6¾	0	7	0	7½
3½	0	6	0	6	0	6½	0	7	0	7½	0	8	0	8¼	0	8¾
4	0	6½	0	7	0	7½	0	8	0	8½	0	9	0	9½	0	10
4½	0	7¼	0	8	0	8½	0	9	0	9½	0	10	0	10¾	0	11¼
5	0	8	0	8¾	0	9½	0	10	0	10½	0	11¼	1	0	1	0½
5½	0	9	0	9½	0	10½	0	11	0	11½	1	0½	1	1	1	1¾
6	0	9¾	0	10½	0	11¼	1	0	1	0¾	1	1½	1	2¼	1	3
6½	0	10½	0	11¼	1	0	1	1	1	2	1	2½	1	3¼	1	4¼
7	0	11½	1	0¼	1	1	1	2	1	3	1	3¾	1	4½	1	5½
7½	1	0	1	1	1	2	1	3	1	4	1	5	1	5¾	1	6¾
8	1	1	1	2	1	3	1	4	1	5	1	6	1	7	1	8
8½	1	2	1	3	1	4	1	5	1	6	1	7½	1	8½	1	9½

TABLE, *continued.*

Showing the price per lineal foot for Scantlings of Fir or Deal, Kaurie Pine, Mahogany, Australian hardwoods, &c., from 6s. 6d. to 10s. per cube foot.

Inches.	Per foot cube, "All Materials."															
	6s. 6d.		7s. 0d.		7s. 6d.		8s. 0d.		8s. 6d.		9s. 0d.		9s. 6d.		10s. 0d.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
3 by 9	1	2½	1	3¾	1	4¾	1	6	1	7	1	8¼	1	9¼	1	10½
9½	1	3½	1	4½	1	5¾	1	7	1	8	1	9¼	1	10½	1	11¾
10	1	4¼	1	5½	1	6¾	1	8	1	9¼	1	10½	1	11¾	2	1
10½	1	5	1	6¼	1	7½	1	9	1	10¼	1	11½	2	0¾	2	2¼
11	1	5¾	1	7¼	1	8½	1	10	1	11¼	2	0¾	2	2·	2	3½
11½	1	6½	1	8	1	9½	1	11	2	0¼	2	1¾	2	2¾	2	4¾
12	1	7½	1	9	1	10½	2	0	2	1½	2	3	2	4½	2	6
4 by 4	0	8½	0	9¼	0	10	0	10½	0	11¼	1	0	1	0¾	1	1¼
4½	0	9¾	0	10½	0	11¼	1	0	1	0¾	1	1½	1	2¼	1	3
5	0	10¾	0	11½	1	0½	1	1¼	1	2	1	3	1	4	1	4½
5½	1	0	1	0¾	1	1¾	1	2½	1	3½	1	4½	1	5½	1	6¾
6	1	1	1	2	1	3	1	4	1	5	1	6	1	7	1	8
6½	1	2	1	3	1	4¼	1	5¼	1	6¼	1	7½	1	8½	1	9½
7	1	3	1	4¼	1	5½	1	6½	1	7¾	1	9	1	10	1	11¼
7½	1	4¼	1	5½	1	6¾	1	8	1	9¼	1	10½	1	11¾	2	1
8	1	5¼	1	6½	1	8	1	9¼	1	10½	2	0	2	1½	2	2½
8½	1	6¼	1	7¾	1	9¼	1	10½	2	0	2	1½	2	2¾	2	4¼
9	1	7½	1	9	1	10½	2	0	2	1½	2	3	2	4½	2	6
9½	1	8½	1	10	1	11¾	2	1¼	2	2¾	2	4½	2	6	2	7½
10	1	9½	1	11½	2	1	2	2½	2	4¼	2	6	2	7½	2	9¼
10½	1	10¾	2	0½	2	2¼	2	4	2	5¾	2	7½	2	9¼	2	11
11	1	11¾	2	1½	2	3½	2	5¼	2	7	2	9	2	10¾	3	0½
11½	2	0¾	2	2¾	2	4¾	2	6½	2	8½	2	10½	3	0¼	3	2¼
12	2	2	2	4	2	6	2	8	2	10	3	0	3	2	3	4
5 by 5	1	1½	1	2½	1	3½	1	4½	1	5½	1	6¾	1	7¾	1	9½
5½	1	2¾	1	4	1	5	1	6¼	1	7¼	1	8½	1	9¾	1	11
6	1	4¼	1	5½	1	6¾	1	8	1	9¼	1	10½	1	11¾	2	1
6½	1	5½	1	6¾	1	8¼	1	9½	1	11	2	0¼	2	1½	2	3
7	1	6¾	1	8¼	1	9¾	1	11¼	2	0¾	2	2¼	2	3½	2	5
7½	1	8	1	9¾	1	11¾	2	0¾	2	2½	2	4	2	5½	2	7
8	1	9½	1	11¼	2	1	2	2½	2	4¼	2	6	2	7½	2	9¼
8½	1	10¾	2	0½	2	2½	2	4	2	6	2	7¾	2	9¾	2	11¼
9	2	0¼	2	2	2	4	2	5¾	2	7¾	2	9¾	2	11½	3	1¾
9½	2	1½	2	3½	2	5½	2	7½	2	9½	2	11½	3	1½	3	3¾
10	2	3	2	5	2	7¼	2	9¼	2	11¼	3	1½	3	3½	3	5½
10½	2	4½	2	6½	2	8¾	2	10¾	3	1	3	3¼	3	5½	3	7¾
11	2	5¾	2	8	2	10¼	3	0½	3	2¾	3	5¼	3	7½	3	9¾
12	2	8½	2	11	3	1½	3	4	3	6½	3	9	3	11½	4	2

TABLE,—*continued.*

Shewing the price per lineal foot for Scantlings of Fir or Deal, Kaurie Pine, Mahogany, Australian hardwoods, &c. from 6s. 6d. to 10s. per cube foot.

Inches.	Per cube foot, "All Materials."															
	6*s.* 6*d.*		7*s.* 0*d.*		7*s.* 6*d.*		8*s.* 0*d.*		8*s.* 6*d.*		9*s.* 0*d.*		9*s.* 6*d.*		10*s.* 0*d.*	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
6 by 6	1	7½	1	9	1	10½	2	0	2	1½	2	3	2	4½	2	6
6½	1	9	1	10¾	2	0¼	2	2	2	3½	2	5¼	2	6¾	2	8½
7	1	10¾	2	0½	2	2¼	2	4	2	5¾	2	7½	2	9¼	2	11
7½	2	0¼	2	2¼	2	4	2	6	2	7½	2	9¾	2	11½	3	1½
8	2	2	2	4	2	6	2	8	2	10	3	0	3	2	3	4
8½	2	3½	2	5¾	2	7¾	2	10	3	0	3	2¼	3	4¼	3	6½
9	2	5¼	2	7½	2	9¾	3	0	3	2¼	3	4½	3	6¾	3	9
9½	2	6¾	2	9¼	2	11½	3	2	3	4¼	3	6¾	3	9	3	11½
10	2	8½	2	11	3	1½	3	4	3	6½	3	9	3	11½	4	2
10½	2	10	3	0¾	3	3¼	3	6	3	8½	3	11½	4	2¼	4	4½
11	2	11¾	3	2½	3	5¼	3	8	3	10¾	4	1½	4	4¾	4	7
11½	3	1¼	3	4¼	3	7¼	3	10	4	0¾	4	3¾	4	6½	4	9½
12	3	3	3	6	3	9	4	0	4	3	4	6	4	9	5	0
7 by 7	2	2½	2	4½	2	6½	2	8½	2	10½	3	0¾	3	2¾	3	4¾
7½	2	4½	2	6½	2	8¾	2	10¾	3	1	3	3¼	3	5½	3	7¾
8	2	6¼	2	8½	2	10¾	3	1¼	3	3½	3	6	3	8½	3	10½
8½	2	8	2	10½	3	1	3	3½	3	6	3	8½	3	11¼	4	1½
9	2	10	3	0¾	3	3¼	3	6	3	8¾	3	11¼	4	2¼	4	4½
9½	3	0	3	2½	3	5¼	3	8¼	3	11	4	1¾	4	4¾	4	7¼
10	3	1¾	3	4½	3	7½	3	10¾	4	1½	4	4¼	4	7½	4	10¾
10½	3	3¾	3	6¾	3	9¾	4	1	4	4	4	7	4	10¼	5	1¼
11	3	5½	3	8¾	4	0	4	3½	4	6½	4	9½	5	1	5	4
11½	3	7½	3	10¾	4	1¾	4	5¾	4	9	5	0¼	5	2¾	5	7
12	3	9½	4	1	4	4½	4	8	4	11½	5	3	5	6½	5	10
8 by 8	2	10¾	3	1¼	3	4	3	6¾	3	9½	4	0	4	2¾	4	5½
8½	3	0¾	3	3½	3	6½	3	9¼	4	0¾	4	3	4	5¾	4	8¾
9	3	3	3	6	3	9	4	0	4	3	4	6	4	9	5	0
9½	3	5	3	8¼	3	11½	4	2½	4	5¾	4	9	5	0	5	3¼
10	3	7¼	3	10½	4	2	4	5¼	4	8½	5	0	5	3¼	5	6½
10½	3	9½	4	1	4	4½	4	8	4	11½	5	3	5	6½	5	10
11	3	11½	4	3¼	4	7	4	10½	5	2¼	5	6	5	9½	6	1¼
11½	4	1¾	4	5½	4	9½	5	2¼	5	5	5	9	6	0¾	6	4½
12	4	4	4	8	5	0	5	4	5	8	6	0	6	4	6	8

TABLE, *continued.*

Showing the price per lineal foot for Scantlings of Fir or Deal, Kaurie Pine, Mahogany, Australian hardwoods, &c., from 6s. 6d. to 10s. per cube foot.

Inches.	Per cube foot, "All Materials."															
	6s. 6d.		7s. 0d.		7s. 6d.		8s. 0d		8s. 6d.		9s. 0d.		9s. 6d.		10s. 0d.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
9 by 9	3	8	3	11¼	4	2¾	4	6	4	9½	5	0¾	5	3¼	5	8½
9½	3	10½	4	1¾	4	5½	4	9	5	0½	5	4	5	7	6	0
10	4	0¾	4	4½	4	8¼	5	0	5	3¾	5	7½	5	10¾	6	3½
10½	4	3¼	4	7	4	11	5	3	5	7	5	10¾	6	2½	6	7
11	4	5¾	4	9¾	5	2	5	6	5	10¼	6	2¼	6	6½	6	10½
11½	4	8	5	0¼	5	4¾	5	9	6	1¼	6	5½	6	10	7	2¼
12	4	10½	5	3	5	7½	6	0	6	4½	6	9	7	1½	7	6
10 by 10	4	6¼	4	10½	5	2½	5	6¾	5	11	6	3	6	7¼	6	11½
10½	4	8¼	5	1¼	5	5½	5	10	6	2½	6	6¾	6	11	7	3½
11	4	11½	5	4¼	5	8¾	6	1¼	6	6	6	10½	7	3¼	7	7¾
11½	5	2¼	5	7	5	11¾	6	4½	6	9½	7	2¼	7	7	7	11¾
12	5	5	5	10	6	3	6	8	7	1	7	6	7	11	8	4
11 by 11	5	5½	5	10½	6	3¾	6	8¾	7	1¾	7	6¾	7	11¾	8	4¾
11½	5	8½	6	1¾	6	7	7	0¼	7	5½	7	10¾	8	4	8	9¼
12	5	11½	6	5	6	10½	7	4	7	9½	8	3	8	8½	9	2

STRENGTH OF TIMBER.—On page 57 I have given the result of the only reliable experiments hitherto tried upon the strength and elasticity of some of the Australian hardwoods. The pieces tried were well seasoned picked specimens, 1¾ inches square, supported at each end with a clear bearing of 4 feet, the weight being applied in the centre, and with the following results :—

	Breaking weight in lbs.	Weight in centre without injury in lbs.	Ultimate deflection in inches.
Box, mean of 4 experiments ...	1092	658	0.90
Iron bark ditto	1022	742	1.31
Spotted gum ditto	896	560	0.85
Stringy bark ditto	812	560	1.20

The above experiments were made with the view of comparing the results obtained by Professor Barlow, at Woolwich Dockyards, as given on page 57 and were similarly conducted in every essential particular.

TABLE showing the results of experiments on the properties of New South Wales and other timber :—

TIMBER.	Specific gravity or ounces per cube foot.	Elasticity or stiffness, Red Pine being 1.00.	Breaking weight in lbs. per square in., 12 in. bearing.	Ditto, or strength, Red Pine being 1.00.
Box, mean of 4 experiments ...	1,230	1.17	2,445	1.82
Iron bark, do. ...	1,211	0.91	2,288	1.70
Spotted gum, do...	1,035	1.06	2,006	1.49
Stringy bark, do...	937	0.75	1,818	1.36
Teak	745	1.31	2,462	1.84
Ash	760	0.89	2,026	1.50
Canadian oak ...	872	1.16	1,766	1.32
English oak ...	934	0.79	1,672	1.25
Pitch pine ...	660	0.61	1.632	1.22
Beech	852	0.74	1,556	1.16
Red pine	657	1.00	1,341	1.00
Riga fir	753	0.72	1,108	0.83
Elm	553	0.38	1.013	0.75

The first series of experiments were made at the Sydney Mint by the Commissioner of Railways in August, 1858.

The second series of experiments are taken from "Barlow on the Strength of Timber and Iron," and show the mean of three experiments on each description of timber, the samples being selected from Woolwich Dockyards.

The following Table is calculated from formulæ given by Barlow, viz. $W = \frac{4 A D^2 S}{L}$ in which W represents the breaking weight in lbs. of a piece of timber, A being its breadth, D its depth, L its length or bearing, and S the tabular strength of each square inch in sectional area: the value of S for different kinds of timber is given in the above table, where we find red pine to be 1,341. The result of the above formulæ may also be stated in cwts., thus $W = \frac{4 A D^2 1,341}{12 \times 112} = 4 A D^2$ and lastly $\frac{W}{4} = A D^2$ the result given in the following table, from which may be ascertained the strength of any scantling, of timber, by multiplying the result, given in the following table, by the proportions stated in the fourth column of the above table, which I have cast out for this purpose.

EXAMPLE.—One-fourth of the breaking weight of a piece of red pine 14 inches deep by 12 inches in width, with a clear bearing of 20 feet. is shown by the following table to be 117.6 cwt. (see example at the end of table) this multiplied by 1.82 will be 214. cwt., equal to one-fourth of the breaking weight of box. the weight being applied in the centre of a beam or $\frac{1}{4}$ of the breaking weight if distributed equally over the beam, as in a girder for a floor, shop window, &c.

TABLE SHOWING THE STRENGTH OF RED PINE TIMBER.

The weights in this Table are—$\frac{1}{8}$th of the breaking weight of different scantlings, having 1 foot bearing, uniformly loaded; or $\frac{1}{4}$th of the same when suspended in the middle.

RULE.—To ascertain the strength of a piece of timber: Divide the third or cwt. column by the length or bearing of the timber, and the weight in cwts. will be obtained.

Depth.		Breadth.		Cwt.
1½	by	1	...	2·2
		1½	...	3 4
		2	...	4·5
		3	...	6 7
		4	...	9·0
		5	...	11·2
		6	...	13 5
		7	...	15·7
		8	...	18 0
		9	...	20·2
		10	...	22·5
		11	...	24·7
		12	...	27·0
2	by	1½	...	6·0
		2	...	8·0
		3	...	12·0
		4	...	16·0
		5	...	20 0
		6	...	24·0
		7	...	28·0
		8	...	32 0
		9	...	36 0
		10	...	40·0
		11	...	44·0
		12	...	48 0
3	by	2	...	18 0
		2½	...	22 5
		3	...	27·0
		4	...	36·0
		5	...	45·0
		6	...	54·0
		7	...	63·0
		8	...	72·0
		9	...	81·0
		10	...	90 0
		11	...	99·0
		12	...	108·0
4	by	2	...	32·0
		2½	...	40 0
		3	...	48·0
		3½	...	56·0
4	by	4	...	64·0
		5	...	80 0
		6	...	96·0
		7	...	112·0
		8	...	128·0
		9	..	144·0
		10	...	160·0
		11	...	176·0
		12	...	192·0
5	by	2	...	50·0
		2½	...	62·5
		3	...	75·0
		3½	...	87·5
		4	...	100·0
		5	...	125·0
		6	...	150·0
		7	...	175 0
		8	...	200 0
		9	...	225·0
		10	...	250·0
		11	...	275·0
		12	...	300 0
		13	...	325 0
		14	...	350·0
		15	...	375·0
6	by	2	...	72·0
		2½	...	90·0
		3	...	108·0
		3½	...	126·0
		4	...	144·0
		5	...	180·0
		6	...	216·0
		7	...	252 0
		8	...	288·0
		9	...	324·0
		10	...	360·0
		11	...	396·0
		12	...	432·0
		13	...	468·0
		14	...	504·0
		15	...	540 0
7	by	2	...	98·0
		2½	...	122·5
		3	...	147·0
		3½	...	171·5
		4	...	196·0
		5	...	245·0
		6	...	294·0
		7	...	343·0
		8	...	392 0
		9	...	441·0
		10	...	490 0
		11	...	539·0
		12	...	588·0
		13	...	637·0
		14	...	686·0
		15	...	735·0
8	by	2	...	128·0
		2½	...	160·0
		3	...	192·0
		3½	...	224 0
		4	...	256 0
		5	...	320·0
		6	...	384·0
		7	...	448 0
		8	...	512·0
		9	...	576·0
		10	...	640·0
		11	...	704·0
		12	...	768·0
		13	...	832·0
		14	...	896·0
		15	...	960·0
9	by	2	...	162·0
		2½	...	202·0
		3	...	243·0
		3½	...	283·5
		4	...	324·0
		5	...	405·0
		6	...	486·0
		7	...	567·0
		8	...	648·0
		9	...	729·0

TABLE OF THE STRENGTH OF RED PINE (*continued*).

Depth.	Breadth.	Cwt.
9 by	10	810·0
	11	891·0
	12	972·0
	13	1053·0
	14	1134·0
	15	1215·0
10 by	2	200·0
	2½	250·0
	3	300·0
	3½	350·0
	4	400·0
	5	500·0
	6	600 0
	7	700 0
	8	800 0
	9	900·0
	10	1000·0
	11	1100·0
	12	1200·0
	13	1300·0
	14	1400·0
	15	1500·0
11 by	2	242·0
	2½	302·5
	3	363·0
	3½	423·5
	4	484·0
	5	605·0
	6	726·0
	7	847 0
	8	968·0
	9	1089·0
	10	1210·0
	11	1331·0
	12	1452·0
	13	1573·0
	14	1694 0
	15	1815·0
12 by	2	288·0
	2½	360·0
	3	432 0
	3½	504·0
	4	576 0
	5	720·0
	6	864·0
	7	1008 0
	8	1152·0
	9	1296 0
	10	1440 0
	11	1584·0
	12	1728·0
	13	1872·0
	14	2016·0
	15	2160·0
13 by	2	338·0
	2½	422·5
	3	507·0
	3½	591·5
	4	676·0
	5	845 0
	6	1014·0
	7	1183·0
	8	1352 0
	9	1521·0
	10	1690 0
	11	1859·0
	12	2028·0
	13	2197·0
	14	2366·0
	15	2535·0
14 by	2	392·0
	2½	490·0
	3	588·0
	3½	686 0
	4	784·0
	5	980·0
	6	1176·0
	7	1372·0
	8	1568·0
14 by	9	1764·0
	10	1960·0
	11	2156·0
	12	2352·0
	13	2548·0
	14	2744·0
	15	2940·0
15 by	2	450·0
	2½	562·5
	3	675·0
	3½	787·5
	4	900·0
	5	1125·0
	6	1350·0
	7	1575 0
	8	1800 0
	9	2025·0
	10	2250 0
	11	2475·0
	12	2700·0
	13	2925·0
	14	3150·0
	15	3375·0
16 by	2	512·0
	2½	640 0
	3	768·0
	3½	896·0
	4	1024·0
	5	1280·0
	6	1536 0
	7	1792·0
	8	2048·0
	9	2304·0
	10	2560·0
	11	2816·0
	12	3072 0
	13	3328 0
	14	3584·0
	15	3840·0
	16	4096·0

EXAMPLE.

Required the strength of a piece of timber 20 feet clear bearing, and 14 inches deep by 12 inches wide.

Opposite the scantling 14 by 12 will be found 2352·0 cwt. Divide this by 20 feet and the result will be 117·6 cwt.

The comparative strength of various scantlings may also be seen at a glance.

Also the comparative strength of a piece of timber laid flatwise, and another of the same dimensions on edge.

The above Table is founded on experiments made by Barlow, author of the celebrated work on the "Strength of Timber and Iron."

Strength of Ironbark and Stringybark.

The remarks at the head and foot of last Table apply also to this—
D signifies depth and B breadth.

D. B. in. in.	Iron-bark. cwt.	Stringy-bark. cwt.	D. B. in. in.	Iron-bark. cwt.	Stringy-bark. cwt.	D. B. in. in.	Iron-bark. cwt.	Stringy-bark. cwt.
2 by 1½	10.2	8.2	5 by 2	85	68.	7 by 5	417	333.
2	13.6	10.9	2½	106	85.	6	500	400.
3	20.4	16.3	3	128	102.	7	583	466.
4	27.2	21.8	3½	149	119.	8	666	533.
5	34.0	27.2	4	170	136.	9	750	600.
6	40.8	32.6	5	213	170.	10	833	666.
7	47.6	38.1	6	255	204.	11	916	733.
8	54.4	43.5	7	298	238.	12	1000	800.
9	61.2	49 0	8	340	272.	13	1083	866.
10.	68.0	54.4	9	383	306.	14	1166	933.
11	74.8	59.9	10	425	340.	15	1250	1000.
12	81.6	65.3	11	468	374.			
			12	510	408.	8 by 2	228	174
3 by 2	30.6	24.5	13	553	442.	2½	272	218
2½	38.2	30.6	14	595	476.	3	326	261
3	45·9	36.7	15	638	510.	3½	381	305
4	61.2	49.0				4	435	348
5	76.5	61.2	6 by 2	122	98.	5	544	435
6	91.8	73.4	2½	153	122.	6	653	522.
7	107	85.7	3	184	147.	7	762	609
8	122	97.9	3½	214	171.	8	870	696
9	138	110.	4	245	196.	9	979	783
10	153	122.	5	306	245.	10	1088	870
11	168	135.	6	367	294.	11	1196	957
12	184	147.	7	428	343.	12	1306	1044
			8	490	392.	13	1414	1132
4 by 2	54.4	43.5	9	551	441.	14	1523	1219
2½	68.0	54.4	10	612	490.	15	1632	1306
3	81.6	65.3	11	673	539			
3½	95.2	76.2	12	734	588	9 by 2	275	220
4	109	87.1	13	796	636	2½	343	275
5	136	109.	14	857	685	3	413	330
6	163	131.	15	918	734	3½	482	386
7	190	152.				4	551	441
8	218	174.	7 by 2	167	133.	5	689	551
9	245	196.	2½	208	167.	6	826	661
10	272	218.	3	250	200.	7	964	771
11	299	239.	3	292	233.	8	1102	881
12	326	261.	4	333	267.	9	1239	991
						10	1377	1101

STRENGTH OF IRONBARK AND STRINGYBARK.—*Continued.*

The remarks at the head and foot of last Table apply also to this—
D signifies depth and B breadth.

D. in.	B. in.	Iron-bark. cwt.	St'ngy-bark. cwt.
9 by	11	1515	1212
	12	1652	1322
	13	1790	1432
	14	1928	1542
	15	2066	1652
10 by	2	340	272
	2½	425	340
	3	510	408
	3½	595	476
	4	680	544
	5	850	680
	6	1020	816
	7	1190	952
	8	1360	1088
	9	1530	1224
	10	1700	1360
	11	1870	1496
	12	2040	1632
	13	2210	1768
	14	2380	1904
	15	2550	2040
11 by	2	411	329
	2½	514	411
	3	617	494
	3½	720	576
	4	823	658
	5	1029	823
	6	1235	987
	7	1440	1152
	8	1646	1316
	9	1851	1481
	10	2057	1646
	11	2263	1810
	12	2468	1975
	13	2674	2139
	14	2880	2304
	15	3085	2468
12 by	2	490	392
12 by	2½	612	490
	3	734	588
	3½	856	685
	4	979	783
	5	1224	979
	6	1468	1175
	7	1714	1371
	8	1958	1567
	9	2203	1763
	10	2448	1958
	11	2693	2154
	12	2938	2350
	13	3182	2546
	14	3427	2742
	15	3672	2938
13 by	2	575	460
	2½	718	575
	3	862	690
	3½	1006	804
	4	1149	919
	5	1437	1149
	6	1724	1379
	7	2011	1609
	8	2298	1839
	9	2586	2069
	10	2873	2298
	11	3160	2528
	12	3448	2758
	13	3735	2988
	14	4022	3218
	15	4310	3448
14 by	2	666	533
	2½	833	666
	3	1000	800
	3½	1166	933
	4	1333	1066
	5	1666	1333
	6	1999	1599
	7	2332	1866
	8	2666	2132
14 by	9	2999	2399
	10	3332	2666
	11	3665	2932
	12	3998	3299
	13	4332	3465
	14	4665	3732
	15	4998	3998
15 by	2	765	612
	2½	956	765
	3	1148	918
	3½	1339	1071
	4	1530	1224
	5	1913	1530
	6	2295	1836
	7	2678	2142
	8	3060	2448
	9	3443	2754
	10	3825	3060
	11	4208	3366
	12	4590	3672
	13	4973	3978
	14	5355	4284
	15	5738	4590
16 by	2	870	696
	2½	1088	870
	3	1306	1044
	3½	1523	1219
	4	1741	1393
	5	2176	1741
	6	2611	2089
	7	3046	2437
	8	3482	2785
	9	3917	3133
	10	4352	3481
	11	4787	3830
	12	5222	4178
	13	5668	4526
	14	6093	4874
	15	6528	5222
	16	6963	5571

N.B.—In using the tables showing the strength of Baltic red pine, Iron bark and Stringy bark, the length of the bearers should not exceed 24 times their depth.

The best sleepers are those made from seasoned blue or red gum, iron bark, blackwood or box. The trees should be barked and allowed to die before they are felled, by which means they become partly seasoned; the season for falling Australian timber is from March to to September, when the sap falls; it should then be split or sawn and stacked in the shade in such a manner that it may be well ventilated; but with every precaution, the ends will open more or less; this may be partly staid by bolting them, which process is now generally resorted to. It would be worse than useless to tar *unseasoned timber* which would only hasten its decay by preventing the sap evaporating; the cost of unseasoned sleepers may be obtained from the following prices:—

COST OF SLEEPERS.

8 ft. x 9 in. x 4½ in. each.

	s.	d.
Falling, barking, and trimming trees	0	6
Removing logs to saw-pit, within half a-mile ...	0	3
Squaring and preparing timber for sawyers, and sawing complete	0	9
Removing from pit and stacking	0	3
Cost price per sleeper near pit	1	9
Loading, cartage, and unloading, for first mile ...	0	6
Add for each additional mile	0	2
Boring sleeper, 9 inches wide, at both ends ...	0	3½
Riveting sleeper, with ½ in. iron rivets	0	2½
Removing from heap and restacking	0	3

To which must be added the cost of the 2 iron rivets and washers, weighing together about 1½ lbs., and profit on the whole.

Sawn Sided are far superior to the half round sleepers, because very young timber is always inferior to that which has arrived at maturity, as it contains a large proportion of heart and *white* or outside, which is never sound; and although sufficient of the *white* is adzed away to bed the chair, the remainder soon rots, thereby destroying the sleeper and loosening the ballast surrounding it.

In choosing trees for sawn timber, posts, slabs, &c., avoid those with dead branches, which are often an indication of decay when the trees otherwise appear sound. The best wood is always found in full-grown trees, upon dry soils or slopes.

In Splitting Iron Bark the slabs, posts, &c., are split parallel with the *rings*, and generally thin out towards the top, but in Stringy Bark the slabs are generally split in radiating lines from the centre outwards, and in this manner have been split 2 feet wide by 5 feet long.

Posts, Rails, and Slabs, per 100.	Labour only. s.	d.
Falling, sawing, and splitting iron bark slabs, 5½ ft. x 11 ins. x 1½ inch...	10	0
Ditto, stringy bark slabs, do....	7	0
Ditto, do. 3½ ft. x 11 ins. x 1½ inch	5	0
Ditto, iron bark, do.	7	0
Ditto, stringy bark, box or gum posts, 7 ft. x 9 in. x 4 ins., and rails 9 ft. x 6 ins. x 3 ins., viz. 25 posts and 75 rails...	20	0
Falling, sawing, and splitting hardwood posts and rails (as per last item) for 3 rail fencing, at per rod	1	8
FENCING, *per rod, labour only.*		
Mortising posts, adzing rails, sinking holes, and putting up 3-rail fence complete	2	10
Nailing 5 feet narrow spaced paling, on do... ...	0	6
Ditto, wide close paling, 6 nails each, on do ...	1	0

ROUGH TIMBER BRIDGES.

Per cube foot.

	s.	d.
Falling, trimming, and barking gum or box, for piles, bearers, struts, &c., from 15 to 18 inches diam., and from 20 to 40 feet long	0	6
Rough adzing and squaring ditto	0	6
Piling in clay, sand, loose gravel, &c.	1	6
Hoisting, framing, fixing, bolting, &c.	1	0
Sawn planking, railings, guard rails, &c., fixed and bolted, complete	3	9
Wrought hand-rails, &c., framed and fixed, complete	5	0
Add bolts, straps, &c., at per lb.		

CARTAGE.

Cartage of hardwood per cubic foot, including loading and unloading for first mile	0	3
Ditto for every additional mile	0	1
Cartage of 25 posts and 75 rails (scantling as above, weighing 3 tons) for first mile, including loading and unloading	4	6
Ditto, for each additional mile	1	0

N.B.—The whole of the Constants and prices given in Carpentry and Joinery are for hand labour to deal unless otherwise mentioned.

Deal or Pine in Scantlings.

Labour only.

Wages of Carpenter 15d. per hour.	Per cu. ft. s.	Per cu. ft. d.	Per 100 su. ft. s.	Per 100 su. ft. d.
Beams, breast-summers, wall-plates, pole-plates, lintels, templates, wood-bricks, sleepers, &c.	0	7½	4	10
Framing, rough, ordinary scantlings ...	1	1	9	0
Ditto, wrought	1	7	13	2
Ditto, do., and stop chamfered	1	9	14	7
Ditto, do., and rebated	2	0	16	8
Ditto, do., do., and beaded...	2	2	18	1
Wrought proper door and window frames	4	6	37	6
Joists, ground, ceiling-floor, or ceiling joists, notched or housed, and spiked	0	10	6	11
Ditto, framed to binding joists, girders, &c.	1	0	8	4
Ditto, single framed floors, trimmed to well holes, chimnies, &c.	1	1	9	0
Add for each story above ground floor ...	0	1	0	8½
Partitions, 3 in. x 2 in., framed	1	3	10	5
Ditto, 4½ or 5½ x 3	1	0	8	4
If braced, add for each side	0	1	0	8
Ditto, trussed with king posts, add ...	0	3	2	1
Ditto, with king and queen's, add ...	0	4	2	9
Gantry for travelling crane, braced, strutted, and bolted together, not more than 30 feet high, (Oregon pine)	1	0	8	4
Add for every 10 feet extra height ...	0	1	0	8

Travelling crane, (Oregon) trussed with iron tie rods, bars, &c., about double these prices.

Labour in fixing ironwork, including wheels and axles to ditto, p. lb. 1d.

Reckon one-third the cost of Oregon as temporary material.

The bolts, dog-irons, &c., will not exceed 1 lb. per cubic foot.

Railway Buffer Frames.

Hardwood curbing, uprights, heads, sills, struts, sleepers, &c., framed, housed and bolted	2	0	16	8

Ironwork to be charged by the pound.

First class, per cube foot.	s.	d.
Hardwood round piles (vertical) from 20 to 40 feet long, driven complete	3	6
Ditto, raking ditto, or vertical sheet piling... ...	4	6
If in shallow water, or if more than 40 feet long add	1	0
Labor in pile driving, including staging, &c., from 1s. 6d. to	2	0
Hardwood sawn sided, bolted and fixed in walings, braces, collars, struts, straining pieces, corbels, girders or joists	4	6
Hardwood, wrought, framed, and chamfered, in stanchions, sills, diagonal braces, hand-rails, &c.	6	0
Hardwood, rough, wrought or splayed, in guards, fenders, &c....	5	0
Ditto, 3 inch planking on roadways, &c., laid and spiked	3	6
Ditto, 2 inch ditto in footways, &c., do. ...	4	0

The above items include the fixing only of all ironwork, also waste in piles, &c.

ROOFING.

Labor and nails.	Per cu. ft. s.	Per cu. ft. d.	Per 100. s.	Per 100. d.
Single span or valley roof over ground floor	1	2	9	0
Ditto, for every extra floor, add	0	1	0	8
Girders, binders, struts, angle ties, and curb roofing	1	1	9	0
King truss roof, with purlins, &c... ...	1	6	12	6
Queen truss roof, from 30 to 45 feet span, with purlins, &c., over ground floor ...	1	8	13	11
Framed roofing, from 45 to 60 feet span, with principals, king, queen, and prince posts, struts, and purlins over ground floor	2	0	16	8
Ditto, if higher, add per story	0	1	0	8
Fixing screw, king or hanging bolts, stirrups, ties, straps, &c., per lb.	0	2		

HARDWOOD.—Add from 20 to 50 p. cent. on the above items for extra labor. The Australian hardwoods are generally worked before they are even half. seasoned, hence the slightly increased cost of working them, as compared to deal.

Labor and nails, per foot super.

	s.	d.
Common cornices or coves of 1½ inch deal, measuring where lathed	0	5
Wagon headed ceilings, passages, &c., measuring where lathed	0	3
Groined ceilings in halls ditto	1	0
GUTTERS, inch and 1¼ inch deal and bearers ...	0	5
Ditto, to curb roof, add	0	2
Ditto, if curved on plan, add from 2d. to	0	4
CENTERING for brick trimmers, or gauged arches, or culverts	0	5
Ditto small groined arches...	0	10
Common centering on 3 in. ribs, with inch battens for vaults and large culverts	0	4
Heavy centering for arches, 15 to 30 feet span	0	7

N.B.—If the cost of centering is included in the price of brickwork, stonework, &c., the arches, &c., should be taken separately, or the openings not deducted. If the same center is used for more than one opening, the setting and striking only should be reckoned at one-third the cost of the centre.

WEATHER-BOARDING.

Per square.	Labor. s.	d.
Deals rough, ¾ inch, or 6 boards to a 3 inch deal ...	5	0
Ditto, wrought	12	0
Ditto, do., and beaded	14	0

If machine wrought, reckon first item only.

BATTENING.	Materials. s.	d.	Labor. s.	d.
Battening, 3 x 1 for Ladies' slates... ...11	0	1	10	
Ditto for Countess or Viscountess slates ... 9	0	1	7	
Ditto for Duchess, or Short Duchess ... 8	0	1	3	
Ditto for shingles, 15 ins. x 3½ inches, 200 l. ft. of battens ... .12	0	1	7	
Ditto for half 5 feet palings, 60 l. ft. do. ... 4	0	0	6	
Ditto for half 6 feet palings, 50 l. ft. do. ... 3	6	0	5	
If more than two stories high, add per story ...		0	2	
SHINGLING, shingles 15 x 3½ ... £1 10	0	10	0	
Paling roof, half (5 feet) palings 7	6	5	0	
Ditto, half (6 feet) palings 7	6	4	6	

Shingles and half palings are each secured with only one nail.

A square requires 830 shingles for 6-inch, and 1,000 for 5-inch gauge, or 100 five feet, or 90 six feet palings.

Fixed per square.	Materials. £	s.	d.	Labor s.	d.
Sound boarding, with single fillets ...	0	18	0	9	0
1 inch rough boarding...	1	2	0	5	0
Ditto, do., with edges shot	1	3	0	6	3
Ditto, tongued and grooved	1	4	0	10	0
$1\frac{1}{4}$ inch rough boarding	1	7	0	5	6
Ditto, ditto, with edges shot ...	1	8	0	7	6
Ditto, ditto, tongued and grooved	1	9	0	11	0
Add, if wrought, for each side ...				3	0
$\frac{3}{4}$ inch lining to ceilings, wrought T. & G.	1	1	0	14	0

SUNDRIES.

	s.	d.
Planing fir clean from the saw p. ft. super ...	0	1
Ditto, if old saw cut do.	0	$1\frac{1}{2}$
Fixing door frames in new walls, each	2	0
Door and window frames (small) beaded and rebated per lineal foot, all materials ...	0	6
Herring bone trussing, do. do.	0	6
Tilting or eaves fillets, do. do.	0	4
Ridge or hip roll, do. do.	0	4
Rebated laps for lead gutters each	0	7
Cesspools for mud in gutters do.	2	0

MEASUREMENT.—In all cubed work, to the full length of the timbers add the length of tenons, dovetails, scarfs, and all other waste in conversion, but no timber should be cubed of less than 9 superficial inches in sectional area.

In all superficial work such as floors, ceilings, partitions, walls, &c., for "Labour and Nails," or "Labour only," take the full dimensions, including well-holes, chimney breasts, doorways, windows, &c., which are not to be deducted, except the opening exceeds 36 superficial feet, when one-half the area only is allowed.

King and queen posts should be taken full size without deduction for waist in cubing.

TIMBER *at Sydney.*

HARDWOOD in scantling, cut to order, per 100 ft. 16s.
Ditto, 4 x $2\frac{1}{2}$, 10s. 6d.; 5 x $2\frac{1}{2}$, 13s. 6d.; 6 x $2\frac{1}{2}$, 14s. 6d.
Ditto, 3 x 1 battens, 3s. 6d.; $2\frac{1}{2}$ x 1 battens, 3s.; 3 x 2, 7s.
COLONIAL PINE 3 x 2, 6s. 6d. Battens, 3 x 1, 3s. per 100 lin. ft.
BALTIC DEALS 11 x 3, 7d.; 9 x 3, 5d. Battens, 3 x 1, 5s.

OREGON PINE spars, plank, baulk or beams, as imported, p. 100 ft. sup. 16s.

Ditto, cut to scantlings, 20s.

CEDAR, p. sup. ft. ½ inch, 3½d. ; ¾ inch, 4d. ; 1 inch, 4½d. ; 1¼ inch, 5½d. ; 1½ inch, 6½d ; 1¾ inch, 7½d. ; 2 inch, 8½d. 2½ inch and over 35s. p. 100 ft. ; 20 to 24 ins. wide, 1d., above 25 ins. 2d. p. ft. extra.

SHINGLES, best oak, about 15 x 3½, from 20s. to 30s. per 1000.

LATHS, split hardwood, 3 feet, 10s. ; 3½ feet, 12s. ; 4 feet, 14s. per 1000.

PALINGS, best extra box, 5 feet, 14s. ; 6 feet, 18s. per 100.

JAMB LININGS AND ARCHITRAVES.

Machine made per set of 17 *lin. feet.*	Pine. s.	d.	Cedar. s.	d.
6 inch x 1⅜ inch double rebated	9	0	12	0
10½ inch x 1⅜ inch do.	13	0	17	0
15½ inch x 1⅜ inch do.	18	0	23	0
If single rebated, 1s. per set less.				
Architraves 4 inch for one side per set ...	4	0	6	0
Ditto 5 inch sin. faced	5	0	7	0
Ditto 6 inch ditto	6	0	8	0

FLOORING AND LINING.

Machine dressed, per square, "All materials."

	1¼ inch. s.	d.	1 inch. s.	d.	¾ inch. s.	d.	½ inch. s.	d.
Hardwood, wrought, 1 side T. & G.	32	0	27	0				
Australian beech, ditto ...	40	0	33	0	30	0	28	0
Kauric pine ditto ...	36	0	30	0				
Colonial pine ditto ...	32	0	27	0	25	0	23	0
Maryborough pine ditto ...	35	0	30	0	28	0	26	0
Oregon pine ditto ...	34	0	29	0				
Baltic red pine, 6 ins. wide. do.			34	0	29	0	27	0
Pitch pine 5 ins. wide do.	42	0	38	0				
American pine (wrought shelving)			32	0				
Cedar sawn only	46	0	37	0	33	0	29	0

Per foot super.	Materials only. s.	d.	Labour fixed. s.	d.
Deal cased frames, hardwood sunk sills, for 2 inch sashes, brass-cased pullies, prepared to hang single	0	6	0	8
Ditto, prepared to hang double ...	0	7	0	9
If for 2½ inch sashes, add per foot ...	0	1	0	1
VENETIAN deal-cased frames, &c., for 2 inch sashes, prepared to hang single across side lights	0	6	0	9
Ditto, prepared to hang double ...	0	7	0	10
If for 2½ inch sashes, add	0	1	0	1½

N.B.—Stone or brick opening for measurement.

FRENCH CASEMENT FRAMES, &c.

Per super foot.	Materials. s.	d.	Labor fixed. s.	d.
Hardwood, wrought, rebated and beaded or stop chamfered frames, with sunk sill and water bar for 2 inch casement; frame 5 x 3	0	5	0	7
Ditto, with moulded transome ditto	0	6	0	8
Ditto, do., prepared for circular fanlight	0	8	1	0
DOOR FRAMES, 5 x 4, hardwood, fixed for about the same prices.			s.	d.
Ditto, 5 x 3, mill made (not fixed) each			13	0
Ditto, do. do. with transome do.			16	0
Ditto, do. do. prepared for circular fanlight			28	0
Sunk hardwood sill to 3 last items, add			3	0

SHOP FRONT, OR FIXED SASHES.

Small squares, per foot super.

	Materials only. s.	d.	Labour fixed. s.	d.
1½ inch deal ovolo, or other moulding ...	0	2	0	6
2 inch deal ovolo do. ...	0	3	0	7
2½ inch deal ovolo do. ...	0	4	0	8
1½ inch cedar, moulded	0	3	0	9
2 inch cedar, moulded	0	4	0	10
2½ inch cedar, moulded	0	5	0	11

Large Light Sashes.	Materials. s.	d.	Labour. s.	d.
Deal guard or angle beads, per foot run...	0	1	0	1½
Cedar, ditto, do. ...	0	1½	0	2

For large squares or lights reckon Rails and stiles (by Tables of Scantling) from 6s. to 7s. per cube foot, also sash bars and angle bars from 9s. to 10s. per cube foot, "*All materials.*"

SASHES AND FRAMES.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
Deal-cased frames, *hardwood* sunk sills, 1½ inch moulded sashes, single hung, brass-cased pullies, patent lines, and iron weights	0	9	1	3
Ditto, double hung, ditto	0	10	1	4
Deal-cased frames *hardwood* sunk sills, 2 inch moulded sashes, single hung, brass-cased pullies, &c., as above ...	0	10	1	4
Ditto, double hung, ditto ...	0	11	1	5
Ditto, with straight and circular top rails and spandrils, square head inside ...	1	0	2	3
Deal-cased frames, single hung, with 2½ inch sashes, &c., as before	1	0	1	5
Ditto, double hung, do.	1	1	1	6
VENETIAN deal-cased frames, *hardwood* sunk sills, 1½ inch moulded sashes, double hung, &c., as above	1	1	1	7
Ditto, with 2 inch sashes, ditto	1	3	1	9
Ditto, with 2½ inch sashes, ditto... ...	1	5	2	0

SKYLIGHTS, FANLIGHTS, &c.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
1½ inch deal moulded or bevelled bars ...	0	2½	0	7
Ditto, with cross bars	0	3	0	9
2 inch deal moulded or bevelled bars ...	0	3	0	8
Ditto, with cross bars	0	3½	0	8
For every ½ inch extra thickness, add ...	0	0½	0	1
FAN-LIGHT, 1½ inch deal, one light ...	0	3	0	6
2 inch deal, do. ...	0	4	0	7
2½ inch deal, do. ...	0	5	0	8

Per foot super.	Materials. s.	d.	Labor. s.	d.
Inch, or $1\frac{1}{4}$ in. deal, 2 panel square framed back linings elbows or soffits	0	5	1	0
Bead butt, or moulded, add			0	$1\frac{1}{2}$
Bead flush, or quirk moulded, add			0	$2\frac{1}{2}$
Each panel above 2, if square, add			0	2
Ditto, if moulded add				3

WINDOW BOXINGS.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
$1\frac{1}{4}$ inch deal, framed rebated and beaded	0	5	1	2
Inch and $1\frac{1}{4}$ inch, ditto, splayed... ...	0	5	1	3
Inch and $1\frac{1}{4}$ inch boxings, for sliding shutters, or sashes, double hung, including grooves, beads, fillets, &c- ...	0	5	1	6

INSIDE SHUTTERS

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
$\frac{3}{4}$ Inch and inch deal, rebated and beaded or clamped in one height	0	4	1	0
Inch and $1\frac{1}{4}$ inch deal, two panel, square framed	0	5	1	0
Bead butt and square	0	5	1	1
Moulded or bead flush and square ...	0	5	1	2
Moulded and bead butt	0	5	1	3
Moulded and bead flush	0	5	1	4
For every extra panel, add	0	0	0	2
For every extra height, add	0	0	0	2

If under 9 inches wide, add one fourth to labour only.

CLARKE'S PATENT SHUTTERS.

Per foot super	s.	d.
Steel self-revolving safety shutters for shop fronts and private houses, *imported*	4	6
Self-coiling revolving wood shutters	3	3

Deal, *per foot super, labor only, fixed.*

Cost equal to wages of Joiner per hour, multiplied by time given.

	Hours and 12ths, or shillings and pence at 1s. per hour.				
	½ in. & ¾ in.	1 in. & 1¼ in.	1½ in.	2 in.	2½ & 3 in.
Rough fitted or fixed	0 0¾	0 1	0 1½	0 2	0 2½
Ditto edges shot	0 1½	0 1¾	0 2	0 2½	0 3
Wrought one side	0 2	0 2¼	0 2½	0 3	0 4
Ditto, grooved and tongued	0 3	0 3½	0 4	0 5	0 6
Ditto, framed or clamped	0 4	0 4½	0 5	0 6	0 8
Ditto, matched and beaded	0 4½	0 5	0 6	0 7	0 8
Ditto, dovetailed or keyed	0 5	0 6	0 7	0 8	0 9
Wrought both sides	0 3	0 3½	0 4	0 5	0 6
Ditto, framed or clamped	0 4½	0 5	0 6	0 7	0 9
Ditto, matched and beaded	0 5	0 6	0 7	0 8	0 9
Ditto, dovetailed or keyed	0 6	0 7	0 8	0 9	0 10
Ditto, grooved and tongued	0 4	0 4½	0 5	0 6	0 8
Ditto, mortice clamped ends, per foot run	.....	0 5	0 6	0 7	0 9
If on bearers, add per foot super	0 1	.....	0 1½	.....	0 2
If mitred, add for each mitre	.....	0 5	0 6	0 7	0 8
If beaded, rebated, or feather-tongued, add per foot super	.....	0 0½	0 0¾	0 1	0 1½
If plugged to walls, add per foot super	0 0½	0 0¾	0 1	0 1½	.....
If ledged or staff beaded, add per foot super	0 1	0 1¼	0 1½	0 1¾	0 2

Shutters for Shop Fronts.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
1 inch and $1\frac{1}{4}$ inch deal, 2 or 3 panels, high, square framed	0	5	0	11
Bead butt and square	0	5	1	0
Moulded or bead flush and square ...	0	5	1	1
Bead flush and bead butt...	0	5	1	2
Reed flush or raised—moulded	0	$5\frac{1}{2}$	1	3
For every extra panel in height, add ...	0	0	0	1
$1\frac{1}{2}$ inch deal, add	0	1	0	1
$2\frac{1}{2}$ inch moulded stallboard	0	9	1	4
Grooves to inclose shutters, per foot run	0	2	0	8
Fixing iron shoes, per pair	0	0	0	10

For circular work, see Rules, page 82.

All fastenings, iron shoes, &c., extra, at per lb.

Framed Grounds.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
Inch deal framed grounds	0	4	0	7
If $1\frac{1}{4}$ inch deal, add	0	1	0	1
1 inch skeleton grounds, for pilasters, &c.	0	4	0	6
$1\frac{1}{4}$ inch ditto ditto	0	5	0	7
$1\frac{1}{2}$ inch ditto ditto	0	6	0	8
2 inch ditto ditto	0	7	0	9
If beaded or back rebated, add	0	0	0	1
If under 9 inches wide, add	0	0	0	1

Door Linings.

Per foot super.	Material only. s.	d.	Labor fixed. s.	d.
1 inch deal, single rebated and beaded ...	0	4	0	7
Double rebated and beaded	0	4	0	8
$1\frac{1}{4}$ inch deal, single rebated and beaded...	0	5	0	8
$1\frac{1}{4}$ inch square framed 2 panel jambs, and 1 panel head, single rebated	0	5	1	0
Ditto, bead butt, bead flush or moulded...	0	5	1	1
Ditto, reed flush, or bolection moulded ...	0	5	1	2
For every extra panel, add	0	0	0	1
If raised panels, add on the moulded ...	0	1	0	2
If $1\frac{1}{2}$ inch, add	0	1	0	1

EXAMPLE.—Required the cost of $1\frac{1}{4}$ inch deal single rebated and beaded door linings upon inch deal framed grounds.

Item 3 as above, and item 1 of framed grounds, viz :—

	s.	d.
Materials, Grounds, 4d.; Linings, 5d.	0	9
Labour, do. 7d.; do. 8d.	1	3
	2	0

GATES AND COACH-HOUSE DOORS.

Per foot super.	Materials only. s.	d.	Labor only s.	d.
2 inch deal, framed and braced, filled in with inch deal, tongued and beaded ...	0	8	1	0
$2\frac{1}{2}$ inch ditto, with $1\frac{1}{2}$ inch framed rails and braces, filled in with inch deal, rebated and beaded	0	10	1	2
2 inch deal, pallisade gates, lower part bead butt, or bead flush and square, upper part $1\frac{1}{4}$ inch pallisades	0	7	1	1
$2\frac{1}{2}$ inch ditto, ditto	0	9	1	3
2 inch deal, 6 panel gates, bead butt or bead flush and square	0	9	1	8
$2\frac{1}{2}$ inch ditto, ditto	0	10	1	10
For two extra panels, add	0	1	0	2
If bead butt or bead flush back, add ...	0	0	0	2
If 3 inch deal gates, add on the $2\frac{1}{2}$ inch...	0	2	0	2
If framed with a wicket, add	0	1	0	2

Hinges and other ironmongery to be charged extra.

WAINSCOTING OR PANELLING

per foot super.	Materials only. s.	d.	Labour fixed. s.	d.
Inch deal, square framed up to ceiling .	0	4	0	5
$1\frac{1}{4}$ inch ditto	0	5	0	6
Ditto, moulded, bead butt or bead flush .	0	6	0	7
1 inch, dwarf square framed . .	0	4	0	6
$1\frac{1}{4}$ inch ditto	0	5	0	7
Ditto, moulded, bead butt or bead flush .	0	5	0	8
If two panels high, or raking to stairs, add	0	1	0	2
If raised and moulded, add . . .	0	1	0	2

For cedar or circular work, see page 82.

DEAL PANELLED AND OTHER DOORS.—*All materials, per foot super.*

	1 inch. s. d.	1¼ inch. s. d.	1½ inch. s. d.	1¾ inch. s. d.	2 inch. s. d.	2½ inch. s. d.
Ledged doors, traps and flaps, T. G. and beaded ...	0 9	0 10	0 11	.....	.....	.....
Ledged and braced, or folding, or in 2 heights ...	0 10	0 11	1 0	.....	.....	.....
Dwarf doors, 1 panel moulded and square, including framed fronts	1 2	1 3	1 4	.....	.....	.....
Skeleton doors, 4 panels flush for covering	.....	1 2	1 4	1 6	1 8	.....
Closet doors, 2 or 3 panel square	1 1	1 2	1 3	.....	.....	.....
Ditto, four panel moulded and square... ...	1 3	1 4	1 5	.....	.....	.....
4 panel doors, framed and ledged	.....	1 3	1 4	1 6	1 8	2 0
Ditto, bead butt, or moulded and square ...	.....	1 4	1 5	1 7	1 9	2 1
Ditto, double moulded	.....	1 5	1 6	1 8	1 10	2 2
Ditto, folding doors with raised panels	.....	.....	.....	2 0	2 3	2 6
Ditto, bolection or raised moulded	.....	1 6	1 7	1 9	1 11	2 3
If 6 panel doors, add to 4 panel doors...	.....	.....	0 3	0 3	0 4	0 5
If 8 panel door, ditto	.....	.....	.....	0 5	0 6	0 7
If folding doors, ditto	.....	.....	0 3	0 4	0 5	0 6
6 panel doors, raised panels and raised mouldings ...	.....	.....	2 0	2 3	2 6	2 9
Sash doors, 4 or 6 lights, lower panel moulded (glazed)	.....	.....	1 3	1 4	1 6	.....
Sash doors with raised mouldings, upper panel fluted plate glass (1 light)...	.....	.....	.....	2 0	2 2	2 4
Sash doors, raised mouldings and margin lights (glazed)	.....	.....	1 8	1 10	2 0	2 2
French casements, moulded and glazed	.....	.....	1 6	1 8	1 10	2 0
French casements, raised mouldings (glazed)	.....	.....	1 10	2 0	2 2	2 4
Ditto, ditto, and circular glass...	.....	.....	2 0	2 2	2 4	2 6
Ditto, raised panel, moulded and circular glass...	.....	.....	2 2	2 4	2 6	2 8

PARTITIONS.

Per foot super.	Materials only. s.	d.	Labour fixed. s.	d.
1 inch, board and brace	0	4	0	6
$1\frac{1}{4}$ inch ditto	0	5	0	7
$1\frac{1}{2}$ ditto with $\frac{3}{4}$ inch panels	0	6	0	8
$1\frac{1}{4}$ ditto, square framed	0	5	0	9
$1\frac{1}{2}$ ditto ditto	0	6	0	10
Ditto, moulded both sides	0	6	0	11
2 inch, square framed	0	8	0	11
Ditto, bead butt, or moulded and square	0	8	0	0
Ditto, moulded both sides	0	8	0	1
If raised moulded, add	0	0	0	2
If in $2\frac{1}{2}$ inch deal, add	0	2	0	2

COUNTERS.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
1 inch deal top, glued and blocked	0	5	0	6
$1\frac{1}{4}$ inch, ditto do.	0	6	0	7
$1\frac{1}{4}$ inch deal fronts, framed square	0	5	0	6
Ditto, do. moulded	0	5	0	7
Morticed clamps, per foot run	0	$1\frac{1}{2}$	0	6
Tongued heading joints, per foot run	0	$1\frac{1}{2}$	0	$4\frac{1}{2}$
Mitres to clamps, each	0	0	0	8
Fitting and hanging flaps, each	0	0	1	0

WATER CLOSETS.

Per foot super.				
1 inch deal seat, riser, and bearers	0	5	0	8
Ditto, framed and beaded top, with mortice clamped flap	0	5	0	11
If $1\frac{1}{4}$ inch deal, add	0	1	0	1
1 inch deal, bead flush, framing	0	5	0	9
Rounded nosings, per foot run	0	0	0	2
Moulded do. do.	0	1	0	4
Cutting and dishing holes in deal, each	0	0	1	3
Ditto, for pull, including beads, do.	0	3	2	0
Mitres to mortice clamps, each	0	2	0	10

For cedar, or for circular work, see Rules, page 82.

STAIRCASES.

Labor only per story.

	£	s.	d.		£	s.	d.
Common stairs complete . .	4	0	0				
Dog leg stairs complete . .	6	0	0	to	8	0	0
Stairs with open strings, return nosings, continued handrail, steps cut into notch board, and about 3½ feet long . . .	18	0	0	to	20	0	0
Geometrical stairs with single rail, steps about 5 feet long . .	28	0	0	to	30	0	0
Ditto ditto per step .					1	10	0

STAIRCASES.

Per foot super.	Materials only. s.	d.	Labor fixed s.	d.
Inch deal wrought steps, risers and two carriages	0	6	0	8
1¼ inch wrought deal steps, risers, and two carriages	0	7	0	8
Ditto, glued and blocked, with moulded nosings	0	8	0	11
Ditto, mitred to cut string board and dove-tailed for ballusters	0	8	1	2
Ditto do. bracketed	0	8	2	4
Add if winders circular one end... ...	0	0	0	5
Ditto if circular both ends	0	0	0	10
Ditto geometrical with wrought and blocked carriages	0	0	0	7
Ditto Riser tongued to step on bottom edge	0	0	0	2
Ditto to both edges	0	0	0	4
1¼ inch square framed spandrels ...	0	6	0	10
Ditto moulded or bead butt	0	7	1	0
Items each.				
Quarter curtail step glued upright ...	1	9	6	3
Proper curtail step and riser	3	0	30	0
Returned moulded and mitred nosings...	0	3	2	6
Ditto, circular	0	4	4	0
Plain cut brackets	0	4	2	6
Housings to step and riser, each end ...	0	0	0	6
Ditto to winders and moulded nosings...	0	0	1	6

String Boards.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
Inch deal, plain wall string and plugging	0	5	0	9
1¼ inch ditto ditto ...	0	6	0	10
1½ inch ditto ditto ...	0	7	1	0
2 inch ditto ditto ...	0	9	1	2
If moulded, add	0	1	0	2
Inch or 1¼ inch deal, plain outside, string rebated, beaded and framed to newels	0	5	1	0
Ditto sunk and beaded, or moulded ...	0	5	1	2
Ditto, and mitred to risers	0	6	1	6

Writhed strings, or facia, 4 times the price of straight for labour and twice for material.

For cedar and circular work, *see* page 82.

Hand Rails, Balusters, Newels, &c.

Per foot run.	Materials only. s.	d.	Labor fixed. s.	d.
Cedar oval 4-inch handrail sunk for balusters	0	6	1	6
Deal moulded handrail, sunk for balusters	0	2	0	9
Ditto do. ramped ...	0	5	2	0
Ditto Swan-neck, or level circular ...	0	8	2	6
Ditto, solid writhed	1	0	6	0
If oval and beaded, add one-sixth.				
Half rails, two-thirds of the whole				
Square framed newel, 3 inches ...	0	2	0	9
Ditto 4 inch stop chamfered with moulded cap and plinth	0	8	2	0
Inch square bar balusters each ...	0	1	0	10
Fixing iron column or newel, each ...	0	0	4	0
Ditto iron balusters do. ...	0	0	1	6
Ditto stays do. ...	0	0	0	9

Iron newels, balusters, and stays, charged extra at per lb.

Turned newels and balusters as per page 83

Mouldings.

Per foot super.	Materials. s.	d.	Labor. s.	d.
Base, surbase, double architraves, cornice, and skirting mouldings ...	0	8	1	0
Ditto, if worked by hand	0	9	1	6
Reeded mouldings in pilasters, &c. ...	0	6	0	9

Columns and Pilasters.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
$1\frac{1}{4}$ inch deal, diminished columns, glued and blocked, not less than 14 inches diameter at the base	0	10	2	0
Ditto, from 14 to 10 inches, do. ...	0	11	2	4
Ditto, under 10 inches, do. ...	1	0	2	8
If $1\frac{1}{2}$ inch deal, add	0	1	0	2
$1\frac{1}{4}$ inch plain pilasters, glued and blocked	0	6	0	9
$1\frac{1}{2}$ inch do. do. ...	0	7	0	10
If diminished swelling, add	0	0	0	2
Capitals and bases prepared for Carvers or Turners, glued in thicknesses, not exceeding 3 in. thick	2	0	2	4
Ditto glued upright and blocked for do.	2	4	3	0
Flutes or reeds, not exceeding one inch wide, to pilasters—per foot run ...	0	0	0	$1\frac{1}{2}$
For every $\frac{1}{2}$ inch in width, add ditto	0	0	0	1
Necking grooves to pilasters, ditto ...	0	0	0	2
Ditto to columns ditto ...	0	0	0	6

Turning to be charged extra, as per page 83

Flutes or reeds to columns one-half more

Frieze and Cradling.

Per foot super.	Materials only. s.	d.	Labor fixed. s.	d.
Cradling, to entablature, $1\frac{1}{2}$ in. thick	0	6	0	8
Inch tongued frieze to shop fronts, &c.	0	4	0	10
$1\frac{1}{4}$ inch ditto	0	5	1	1
Ditto Doric friezes ditto	0	5	2	6
Straight mitres, each	0	0	1	0
Circular ditto	0	0	1	8
Plancier, both edges rounded, per l. ft.	0	1	0	2
Ditto, moulded, do. ...	0	1	0	3
Reeds or flutes, as in pilasters.				

N.B.—The soffit and plancier must be taken as deal, wrought, and framed.

Single Mouldings, &c.

Per foot run.				
½ and ¾ in. common O. G. astragal, &c.	0	0¼	0	1
Ditto, quirked O. G. ovolo, &c. ...	0	0¼	0	1
Inch rounded or moulded nosing ...	0	0½	0	1
Double reeds on edge of shelf	0	0	0	1
Beaded capping with O. G. under ...	0	1	0	3
Mitred, rounded, or moulded door steps	0	0½	0	2
Narrow skirting grounds	0	1	0	1½
Ditto grooved, or rebated	0	1	0	2
Square angle staff, rebated	0	0½	0	2½
1¼ inch angle bead	0	0½	0	2
Glued and mitred borders to hearths, &c.	0	1	0	6
Inch and 1¼ inch common O. G. astragal, torus, ovolo, or bead ...	0	0½	0	1½
Single-faced architraves, 4 inches wide	0	1	0	5
Deal moulded hat rail, per foot run ...	0	2	0	5

Skirtings and Architraves.

Including plugging fillets and backings.

per lineal foot.	Labour only fixed. ¾ & inch. s.	d.	1¼ & 1½ inch. s.	d.
Torus skirtings or O.G. architraves 4 to 7 inches wide	0	4	0	5
Double faced architraves 5 to 8 inches do.	0	5	0	6
Double sunk and moulded skirtings, 12 to 18 inches wide			0	10
O.G. or single moulded skirtings 7 to 12 inches wide	0	4	0	0
Narrow grounds found and fixed, add	0	3	0	4
Fixing machine wrought architraves or skirtings from 4 to 7 inches wide ...	0	2	0	3
Ditto skirtings from 7 to 12 inches wide	0	3	0	4

For cost of pine deal or cedar see Table of Scantlings, page 49.

N.B.—The whole of the foregoing Items in Carpentry and Joinery are cast out at 15d. per hour. with deal at 4d. per sup. foot 1 inch thick, and are about the cost price for ordinary or second class work under the most favourable circumstances. In estimating at 1s. 6d. per hour, add one fifth to the labour, and at least 10 per cent. on the whole cost for incidental expenses besides profit.

Cedar Joinery.—In consequence of the extra cost of cedar, the extra labour in working and the better class of work required for varnishing, Cedar Joinery is worth about ½ more than deal for "All materials."

FRONT DOOR AND FANLIGHT.

Machine made, fixed, complete.

	£	s.	d.
2 inch pine front door, double moulded, with transome light, 26 oz. glass, glazed and swivel hung. 27 sup. feet @ 2s. ...	2	14	0
5 x 3 hardwood rebated and beaded frame and transome rail	1	0	0
23 lin. feet 5 inch sing. faced architrave fixed		8	0
Graining oak and varnishing, 2 coats ...	1	0	0
Furniture, ordinary, and hanging door, &c....		18	0
Cost price for second class house	£6	0	0

BACK DOOR AND FANLIGHT.

Machine made, fixed, complete.

$1\frac{3}{4}$ inch pine, bead butt and square, glazed 2 light fanlight	1	16	0
5 x 3 hardwood rebated frame with transome		18	0
4 inch architrave 6s.; furniture, painting and hanging, 24s.	1	10	0
Cost price for second class house	£4	4	0

INSIDE DOOR, JAMBS, &C.

Machine made, and fixed complete.

$1\frac{1}{2}$ inch cedar double moulded, 4 panel door 7ft x 3	1	10	0
Jamb linings cedar $10\frac{1}{2}$ x $1\frac{1}{2}$, double rebated and fixed	1	2	0
Cedar 5 inch single faced architraves, 2 sets complete	1	0	0
9 sup. yards spirit varnishing 11s.; Furniture 12s., Hanging 5s.	1	8	0
Cost price for second class house	£5	0	0

RAILWAY GATES, N. S. Wales.

For level crossings per cube foot.

		s.	d.
Hardwood wrought in posts, struts, guard rail, &c.		7	0
10 or 12 feet gates, Baltic deal, wrought, framed, tapered and stop chamfered		12	0
10 feet gates, including hardwood, deal, ironwork, painting and hanging complete, about ...	£40	0	0
12 feet gates, ditto ditto ditto ...	£47	0	0

SUNDRIES, each.	s.	d.
Plain corners rounded or reeded	0	3
Cut brackets to shelves	0	5½
Double ditto	0	9
Cross grooves under 12 inches	0	2
Ditto, if stopped in	0	3
Letting ends of shelves into plastering	0	2
Small deal angle shelves in W. C.'s.	1	0
Ditto paper boxes...	2	0

RULES FOR MEASUREMENT.

Circular work of every description in Joinery to be charged as follows, viz. :—

Flat sweep, not more than ½ inch rise per foot, or curves of circles not less than 3 feet diameter, once and half the price of straight work.

Quick sweep, or more than ½ inch rise per 12 inch chord, twice the price of similar straight work.

Elliptical, the same, according to sharpness of the curves.

The above proportions apply to the shape on the plan, or to the elevation only. If they occur on both plan and elevation as circular circular, they must be reckoned twice or three times the price of circular on plan only, *e. g.*, if flat sweep on both plan and elevation, the proportion would be $1\frac{1}{2} \times 2 = 3$ times the price of straight work. If quick sweep on both plan and elevation, the proportion would be $2 \times 3 = 6$ times the price of similar straight work. If flat sweep on plan, and quick in elevation, $4\frac{1}{2}$ times. If quick sweep on plan, and flat in elevation, 4 times.

Circular sashes, frames, shutters, &c., to be measured square, and circular heads to doors, &c., to be measured square above the springing, which gives an addition of $21\frac{1}{2}$ per cent. on the nett measurement, exclusive of the extra charge determined by the previous Rules.

Circular, plain glued in thicknesses, for all degrees of curvature, take twice the price of similar straight solid work; and if circular circular, from 3 to 4 times, according to sharpness of curves.

CORNICES.—In measuring cornices the mouldings do not include the splay or weathering which is to be taken as boarding, wrought, &c., as the case may be.

THE COST OF LABOUR for *Joinery* on Australian Cedar, Huon Pine' &c., is about 50 per cent. more than the cost of similar labour to deal; but the labour to Australian Mahogany, Blackwood, and knotty Huon Pine costs about the same as the labour to Rosewood, or twice the cost of similar work to deal.

IN CARPENTRY, where the surfaces are not wrought, the extra labour required in hardwood seldom exceeds 25 per cent. more than the labour on similar deal scantlings.

"Labour only" on American Clear Pine or Cedar.

	s.	d.
Per Pair.		
Tuscan base and Capital for 6 in. column ...	2	0
Ditto do. 9 in. column ...	2	8
Ditto do. 12 in. column ...	3	4
Doric base and capital for 6 in. column ...	2	8
Ditto do. 9 in. do. ...	3	4
Ditto do. 12 in. do. ...	4	0
Base and cap for 4 inch verandah post ...	2	8
Each.		
Ionic base for 6 in. column (major diam) ...	3	4
Ditto 9 in. do.	4	0
Ditto 12 in. do.	4	8
Corinthian or Composite base for 6 in. column ...	4	0
Ditto do. 9 in. do. ...	4	8
Ditto do. 12 in. do. ...	5	4
Ditto capital for carving 6 in. do. ...	2	8
Ditto do. 9 in. do. ...	4	8
Ditto do. 12 in. do. ...	6	8
Newels 3 in. diameter and 4 feet long	1	4
4 in. do. do.	2	0
5 in. do. do.	2	8
6 in. do. do.	4	0
8 in. do. do.	6	8
10 in. do. do.	13	4
Balusters ordinary for staircases, 2 in. diam ...	0	6
Ditto best do. do.	1	0
Ditto best with spiral column do.	4	0
Ditto for parapets, &c., 3 in. diameter, and 12 in. high	0	8
Ditto 4½ in. diameter and 18 in. high	1	4
Ditto 6 in. do., and 24 in. do.	2	8
Solid ball for finial, &c., 4 in. diameter	2	8
Ditto do. 8 in. do.	4	0
Ditto do. 12 in. do.	5	4
Per Lineal foot.		
4 in. verandah post, with base and cap	0	8
Circular mouldings (circumference measurement) per inch wide	0	3
Ditto per super. foot	2	8

RENDERING, LATHING, &c.

Per super yard.	Materials. s.	d.	Labor. s.	d.
Render or plaster rough on walls ...	0	5	0	4
Ditto and set (2 coats) with fine stuff	0	8	0	6
Render, float, and trowel, set with tint, 3 coats	0	10	0	8
Lathing only, stout laths	0	4	0	3
Ditto and plaster or lay one coat ...	0	8	0	6
Ditto, lay and set 2 coats	0	11	0	8
Lath 2 coats and set with angles floated or lath, lay, float, and set, trowelled and tinted 3 coats	1	2	0	10
If set with gauged putty, add	0	2	0	1
If gauged with plaster of Paris, add ...	0	4	0	2
Lath lay, float, and set to jambs, friezes or soffits per sup. foot	0	2	0	3
Render, float, and set to ditto do. ...	0	1	0	2
Bead and quirk per lin. foot			0	2

FLOORS, *Per super yard.*

Lime and hair trowelled stucco 1 inch thick on 2 inches of concrete ...	1	3	1	0
Keenes cement (3 to 1) 1 inch thick on 2 inches of concrete	2	3	1	3
Portland cement ditto on ditto ...	1	4	1	0
Pugging 2 ins. thick of coarse stuff or mortar on sound boarding	0	4	0	3

For Asphalte and composition floors see page 45

MOSAIC OR ENCAUSTIC TILE FLOORS.

	£	s.	d.
Minton's or Maw's flooring Tiles per sup. yard 17s. to	3	10	0
Laying same on prepared floor or concrete, 15s. to	1	5	0
Laying hearths about 5.0 x 1.6 each	1	0	0
Minton's or Maw's coving tiles 6 x 6 x $\frac{3}{8}$ each, from		1	0
Ditto border tiles 8 x 8 x $\frac{1}{2}$ each from ...		2	0
Ditto border or hearth tiles 6 x 6 x $\frac{1}{2}$ each from		1	6
Lime concrete foundation 2 ins. thick for same per sup. yard		1	0
Cement ditto ditto ditto ...		1	6

Stucco or External Plastering.

	Materials. s.	d.	Labor fixed. s.	d.
per yard super.				
Bastard, or rough stucco jointed on brick or stone walls	0	7	0	9
Ditto on lath, including lathing	1	0	1	0
Trowelled stucco, on brick or stone ...	0	8	1	0
Ditto, on lath and lathing ...	1	1	1	3
per foot super.				
Trowelled or floated jambs, frieze or soffit on brick or stone	0	$1\frac{1}{2}$	0	2
Ditto, on lath including lathing	0	2	0	3
per foot run.				
Raised margins to form panels, 4 inches wide moulded	0	$1\frac{1}{2}$	0	3
Stucco or plaster, bead and quirk ...	0	$0\frac{1}{2}$	0	1
Ditto, and double quirk	0	1	0	2
$4\frac{1}{2}$ inch reveals to windows	0	1	0	2
9 inch ditto	0	2	0	3

The above materials include stone lime (at 1s 6d per bushel) which is best adapted for stucco or external plastering.

Mem.—9 bushels of lime, 1 cube yard of clean, sharp sand, and 6 pecks of loose cow hair will suffice for the following finished work 1 inch thick.

37 sup. yards render or rough stucco and set
35 sup. yards lay or rough stucco on lath and set
32 sup. yards, render 2 coats and set or float, or
30 sup. yards, lay 2 coats, and set or float.

Cement.—In using cement for fine joints of brick, or ashlar, it cannot be too pure: but for Plaster, the best fresh Portland cement will take 6 times its bulk of sand. All exposed flat surfaces, or weatherings, should be set in pure cement with about one-fourth very fine sand to prevent those innumerable very fine cracks which always appear when *pure* cement is used for the finishing or setting coat.

Stucco or lime plaster for external uses is now superseded in Sydney and Melbourne by Portland Cement *compo.*, although samples of stucco are to be found in Sydney in a good state of preservation after 20 years' exposure to all weathers. In country districts where stone lime is more easily obtained than Portland cement, stucco may be used with great advantage, and if properly *trowelled* and coated with *chunam* will be equal in durability to cement *compo.*

Cornices &c., in Plaster of Paris.

Including lathing (if bracketed) or dubbing out.

Per foot run.	Materials. s.	d.	Labor. s.	d.
Plain impost or other mouldings 3 inches girt	0	2	0	3
Ditto, from 3 to 6 inches girt	0	3	0	4½
Ditto, from 6 to 9 inches girt	0	4	0	6
Astragals, O. G.'s, ovolos, small reed, or other mouldings under 3 inches girt	0	1½	0	2½
Cornices, with soffit and frieze, the whole girt to be taken at per foot super. ...	0	6	0	9

Enrichments, centre flowers, &c., *see* p.

Circular mouldings to flowers, for ceilings, &c., to be charged extra.

Portland Cement, Stucco.

per yard super.	Materials. s.	d.	Labor. s.	d.
Rough render, in cement	1	0	0	9
Plain face, on brick or stone jointed ...	1	4	1	2
Ditto, on lath including lathing ...	2	0	1	3
Cornices as above, per foot super ...	0	6	0	9
Plain facia, frieze or pilasters, do. ...	0	4	0	2
Astragals, ovolos, O.G.'s, and other mouldings, grooves, or sinkings, under 3 inches girt, per foot run ...	0	1½	0	2
Ditto, from 3 to 6 inches, do.	0	3	0	4½
Ditto, from 6 to 9 inches girt	0	4	0	6
4½ inch reveals or margins, do. ...	0	2	0	2
9 inch do. do.	0	3	0	3

N.B.—The above prices for materials are reckoned at 5s. per bushel for Portland Cement, and 6d. per bushel for clean-washed sand, mixed in the proportion of 1 of cement to 3 of sand, and averaging ¾ inch thick.

If 1 of cement and 2 of sand is required, add one-fourth to the price of the materials.

Roman Cement, at 3s. per bushel, mixed with an equal proportion of sand, will cost the same as the Materials given for Portland cement, or about 1s. per sup. yard ¾ inch thick.

Cement chimney pots 27 to 36 ins. high, 7s. to 21s.
,, balustrades, 16 to 24 ins. high, 4d. per inch.
,, Trusses, 6 to 24 ins. long, 6d. per inch.

KEENE'S MARBLE CEMENT.

Dubbed out with cement compo.

Per yard super.	Materials. s.	d.	Labor. s.	d.
Medium troweled on brick or stone ...	2	6	1	0
Ditto, on lath including lathing ...	3	0	1	3
per foot super.				
Panels moulded (small)	0	7	0	9
Facias, jambs, pilasters, architraves, ...	0	7	0	8
Plain mouldings	0	9	0	11
Ditto, skirting, 9 inches high, with 3 inches moulded	0	9	0	9
Superfine, plain face and polished, do.	0	9	1	0
Ditto pilasters, panels, friezes, pedestals, and shafts, ...	0	9	1	3
Ditto, plain mouldings, ...	1	0	1	6
Superfine polished buff, ...	1	3	0	9
Ditto, do. green, ...	2	0	0	10
Ditto, do. blue, ...	3	0	1	0

Keene's marble cement chimney pieces, with trusses prepared for graining, £1 15s. to £2 10s.

Ditto polished, white or in scagliola, £2 10s. to £5 5s.

If circular, as in columns, groins, &c., add one-fourth.

MATERIAL REQUIRED *for ¾ inch in thickness of compo. or cement plastering:*

1 bushel cement and 1 of sand will cover 3 sup. yards
1 do. cement and 2 of sand, 4½ sup. yards
1 do. cement and 3 of sand, 6 „
1 do. cement and 4 of sand, 7½ „

N.B.—By adding ½ to the number of sup. yards, the area at ½ an inch thick, or deducting one-third, the area at 1 inch may be obtained.

In MEASURING PLASTERING, a variety of opinions exist, all of them tending more or less to misunderstanding, and consequent litigation. The least objectionable method is to take the *net measurement* at a price calculated to meet the cost of work under consideration, including all extras: and this is the system recommended by the Melbourne Association of Plasterers.

The weathering of cornices to be taken as plain work.

If circular, add one-fourth to each item.

Scaffolding to be charged extra, if erected expressly for the work.

Lime White, and Whitewashing.

per yard super.	Materials. s.	d.	Labour. s.	d.
Lime white, one coat (lime and water)	0	1	0	2
Ditto, two coats do. . .	0	2	0	3
Wash, stop, and white washing with whiting and size to old work . .	0	2	0	6
Ditto, to old ceilings, ornamented .	0	2	0	9
Plain cornice washed, stopped and whited per foot super	0	0½	0	1½

One bushel of lime is required for 80 super yards of limewhite one coat. 12lbs. whiting, ½lb. blue black, and 7 qts. of size will do the same quantity of whitewash.

Plasterers' Materials, &c.

	£	s.	d.
Plasterer, per hour (nett wages) . . 1s. 3d. to	0	1	6
Labourer, do. do. . . 8d. to	0	1	0
Plaster of Paris, fine, per cask of 3½ bushels		19	0
Ditto, superfine, do. . .	1	3	0
Cement, Roman, per cask of 5 bushels 16s. to	0	18	0
Ditto, Portland, do., 4 bushels . .	1	0	0
Marble cement, (Keene's medium) do. . .	2	0	0
Ditto, superfine, do. . .	2	5	0
Ditto, coarse	1	16	0
Heads lime, per bag (Melbourne) . 2s. 3d. to	0	3	0
Geelong roach do. do . . 3s. to	0	5	3
River Don (Hobart Town) lime at Melbourne per bag	0	3	0
Clean sharp sand, per cube yard (within a mile) . . . . . 3s. to	0	5	0
Stone lime in Sydney, per ton . .	2	10	0
Hardwood laths 3 feet, in Sydney, per 1000	0	15	0
„ 3½ feet do. „ . .	0	16	0
„ 4 feet do. „ . .	0	17	0
Hair, colonial, in Sydney, per bushel . .	0	1	6
Carting, one mile, per load, including loading and unloading	0	2	3
Ditto, for every extra mile . . .	0	0	9

For Laths in Melbourne, see page 48 .

Items Each.

Cost of modelling, equal to wages of Modeller per hour, multiplied by time given.	Modelling in clay. Hours.	Castings fixed. s.	d.
Ionic capital, for 12 inch column ...	80	80	0
Ditto, 18 do	120	100	0
Ditto, 24 do	160	120	0
Corinthian or Composite capital, for 12 inch column	112	120	0
Ditto, 18 inch column	144	200	0
Ditto, 24 do	176	240	0
Pilasters or quarter pilasters, the same for models, and one-half for casting.			
Modillion enriched, 4 inch projection...	20	2	0
Ditto, 6 inch do ...	24	3	0
Ditto, 8 inch do ...	32	4	0
Cantilevers or trusses, 10 inch long ...	24	8	0
Ditto, 12 do ...	28	10	0
Ditto, 18 do ...	40	12	0
Pateræ or rosette 4 in. diam.	8	1	6
Ditto, 8 do	12	3	0
Centre or ceiling flower, 12 in. diam....	24	10	0
Ditto, 18 do ...	32	20	0
Ceiling flowers, from 2 to 5 feet, providing the moulds are in stock, will cost £1 per foot diameter.			
Head on keystone, 12 inches deep ...	18	20	0
Ditto, 15 inches do ...	20	30	0
Ditto, 18 inches do ...	24	40	0
Head on 4 inch cymatium of cornice ...	10	4	6
Ditto 8 inch do	12	7	0
Acanthus, or lotus leaf, 8 inches high	12	2	0
Ditto, 12 inches do...	18	6	0
Oak or laurel wreath, 6 inches diam ...	16	2	6
Ditto, 9 inches do ...	20	3	6
Ditto, 12 inches do ...	28	5	0
Ditto, 18 inches do ...	36	8	0
Per foot run.			
Egg and dart moulding, 2 inch girt ...	10	0	6
Ditto do 4 inch do ...	12	0	10
Ditto, do 6 inch do ...	14	1	0
Rope or cable do 2 inch do ...	10	0	10
Ditto, round spiral column	12	1	8

The prices for casting include materials and the use of moulds made from the models, but from 2 to 25 pieces (according to value), or 50 feet of moulding are presumed to be required at these prices.

The present wages of Modellers are about 2s., and Casters 1s. 6d. per hour.

Composition Enrichments.

Including Models and Moulds.

	Complete. s.	d.
Each.		
Ionic capital for 6 in. (major diam.) column ...	40	0
Ditto 8 in. do	50	0
Ditto 12 in. do	70	0
Corinthian or Composite capital for 6 in. column	60	0
Ditto do 9 in. do.	70	0
Ditto do 12 in. do.	80	0
Pilasters at the same rates in proportion to projection		
Trusses and modillions enriched p. lin. inch ...	1	0
Ceiling flowers framed complete, with ventilators, ready for fixing, p. foot diam.	15	0
Rosettes, pateræ or flowers, 2 inch diam. ...	0	3
Ditto 3 inch do	0	4
Ditto 4 inch do	0	6
Per lineal foot.		
Architrave enrichments, $1\frac{1}{2}$ inch wide	0	6
Ditto 2 inches wide ...	0	8
Ditto $2\frac{1}{2}$ inches wide ...	1	0
Ditto 3 inches wide ...	1	4
Ditto 4 inches do ...	2	0
Ditto 5 inches do ...	3	0
Facias, friezes, &c., enriched with laurel oak or vine wreaths, &c., 6 inches wide	3	6
Ditto do 8 inches wide	5	0
Cornices, with enriched friezes, &c., 10 inches wide	7	6
Ditto do 12 inches wide	10	0
Mouldings, in 6 feet lengths, mounted on deal, 1 inch wide	0	4
Ditto do 2 inches wide	0	8
Ditto do 3 inches wide	1	0

For the cost of gilding any of the above, See page

The present wages of Composition, Gelatine, *Carton pierre* or *papier-machè* ornament makers are 1s 6d per hour.

The above Enrichments in Plaster of Paris would be about one-fourth less.

Per yard super.

Labour at 1s. 3d. per hour.	Materials. s. d.	Labor. s. d.
Common colours, such as lead, stone, white, black, brown, chocolate, &c., once in oil, including knotting and stopping	0 3	0 4
Twice in oil, including knotting and stopping	0 5	0 6
Three times in oil ditto ...	0 7	0 8
For every additional coat, add ...	0 2	0 2

Items to be added.

Finishing coat, in party colours ..	0 1	0 1
Flatting coat	0 2½	0 1½
Sanding	0 2	0 2
Grounds for imitations, graining, &c.	0 1½	0 1½
French grey, fawn, drab, salmon ...	0 1½	.....
Lilac, peach blossom, &c.	0 2	.....
Olive green, deep blue, or Indian red	0 5	.....
Patent green, or yellow and blue verditer	0 6	.....
Lake or Chinese vermillion ...	1 6	.....
Imitation granite, or splashed work...	0 5	0 2

Cleaning old work, rubbing down, or bringing forward, to be charged day work.

PLAIN MOULDINGS OR SKIRTINGS, REVEALS AND PLAIN CORNICES, HANDRAILS, NEWELS, SASH-BARS, RAIN-WATER PIPES AND GUTTERS.

Less than 12 *inches girt or width.*

Per lineal yard.	Materials only. s. d.	Labour only. s. d.
Once in oil, common colours, as above, including knotting and stopping	0 1	0 2
Twice in oil, do.	0 2	0 3
Three times in oil do.	0 3	0 4
Flatting coat do.	0 1	0 1
For every extra coat, add	0 1	0 1

Enriched or Carved Work.

Per foot Super.

Labour at 1s. 3d. per hour.	Materials. s.	d.	Labour s.	d.
Once in oil, common colours, as above ...	0	1	0	1
Twice in oil, ditto	0	1½	0	2
Three times in oil, ditto	0	2	0	3
For every extra coat ditto, add	0	0½	0	1
Flatting coat, add	0	0¾	0	1
Mouldings, or edges cut in common colours	0	0½	0	1
Mouldings picked in, or black lines ...	0	0½	0	1½
Broad ebony lines to form panels ...	0	0½	0	2
Light and shadowed lines, ditto ...	0	1	0	3
Plain chimney-pieces, each once in oil	0	6	1	0
Ditto do., twice in oil	1	0	1	6
Ditto do., thrice in oil	2	0	2	6

Sashes and Frames should be measured as plain surfaces, including the glass and the exposed part of frames, with linings, &c., which should be girted; but if the squares exceed 3 super feet, then it is better to take the sash bars by the lineal yard.

In Measuring Painting, allow for all edges, sinkings, or girths. In iron railing, and other open work, it is usual to take the two sides as flat work, and ornamental or small works twice for each side including Louvre blinds or lattice work.

Gilding.

	Materials only. s.	d.	Labour only s.	d.
Gilding plain work in oil gold including preparing per foot super	2	0	3	0
Ditto in burnished or matt gold ...	.....		4	6
Bronze mouldings, not exceeding 2 ins. girt per foot run	0	2	0	3
Oil gold, half inch girt, ditto... ...	0	1	0	3
Ditto, ¾ inch girt, ditto ...	0	1½	0	3
Ditto, 1 inch girt, ditto ...	0	2	0	4½
For every ¼ inch girt, add	0	0½	0	1½

Carved work, once and a half to twice the above prices. The present wages of Gilders are 1s. 6d. per hour.

Graining, &c.

Per yard super.	Complete. s.	d.
Wainscot, or oak, combed and shadowed	1	6
Mahogany, maple, cedar, or sycamore	2	0
Satin wood, coromandel, rose wood, bird's eye, maple, pollard oak, or huon pine	2	6
Yew tree, amboyna, or walnut	3	0
Veined Marbling, including white ground ...	2	3
Dove, bardilla, or black and gold	3	6
Sienna, brocatella, rouge royal, or green verd ...	4	6
Venetian, French, or Devonshire	5	0
Gialla, antico, oriental, verd antique, or jasper ...	6	0
Lapis lazuli, or blue and gold	7	6

If to carved work or to columns, add one-half the above prices ; if to fluted columns, double them.

Varnishing.

	Materials. s.	d.	Labour. s.	d.
Spirit varnish, each coat, per yard ...	0	5	0	2
Varnishing once in best copal, do. ...	0	7	0	2
Ditto, twice do. ...	0	9	0	4
For every additional coat, add	0	4	0	2
If on the naked wood, add	0	2	0	0
French polishing, per foot super. ...	0	1	0	6
Ditto, to columns fluted, do.	0	2	1	0
Ditto, to hand-rails, and small articles, per foot run	0	1	0	5
Black varnish, per gallon	9	0	0	0

Colouring and Distempering.

per yard super.	Materials only s.	d.	Labour only. s.	d.
Wash, stop, and white	0	2	0	4
Ditto, cream tint, grey, fawn, or drab ...	0	3	0	4
Ditto, lilac, tea-green or peach blossom	0	4	0	4
Ditto, light blue, or green with verditer	0	6	0	4
Ditto, clouded ceiling	0	9	1	6
If one coat of colours in turps, add ...	0	2	0	1
Fresco colouring	0	6	0	6

COLOURED GLASS, &c., Melbourne or Sydney.

16 oz. *per foot super.*

	s.	d.		s.	d.
Blue purple or amber	1	3	Embossed borders p. l.		
Ruby and green ...	1	4	foot	1	11
Blue or ruby embossed	5	0	Brilliant cut, ditto	1	11
Ornamental glass	1	0	Ditto rosettes per set	4	6
Ditto stained ...	1	9	Glazing and putty		
Obscured glass ...	0	9	extra per foot ...	0	2

PATENT PLATE GLASS.

In squares for glazing.

21 oz. = 1-10th inch per foot super..

Up to 6 sup. feet 3s 3d From 6 to 12 sup. feet 3s 6d

BRITISH (POLISHED) PLATE GLASS.

per foot super.

	s.	d.		s.	d.
Up to 10 feet super	3	0	From 40 to 50 feet sup.	4	0
From 10 to 20 feet	3	3	50 to 60 feet ,,	4	6
20 to 30 feet	3	6	60 to 70 feet ,,	5	0
30 to 40 feet	3	9	Add 6d per foot for glazing		

FLUTED OR ROLLED PLATE GLASS.

per foot super.

26 oz. $\frac{1}{8}$ inch up to 20 feet super, 10d., 32 oz. 3-16 inch to 20 feet super, 1s 1d.

ROUGH CAST GLASS.

	s.	d.		s.	d.
$\frac{3}{8}$ inch up to 20 ft. sup.	2	6	$\frac{3}{4}$ inch up to 20 ft. sup.	6	0
$\frac{1}{2}$ inch do.	3	0	1 inch do.	8	0

SHEET GLASS IN SQUARES.

Thirds per foot super.

From	To	16 oz. s.	16 oz. d.	21 oz. s.	21 oz. d.	26 oz. s.	26 oz. d.
0 ,,	2 sup. ft.	0	5				
2 ,,	4 ,,	0	6	0	7	0	8
4 ,,	6 ,,	0	7	0	8	0	9
6 ,,	8 ,,	0	$7\frac{1}{2}$	0	10	0	11
8 ,,	10 ,,	0	8	0	11	1	1
10 ,,	12 ,,	0	$8\frac{1}{2}$	1	1	1	3
12 ,,	14 ,,	0	9	1	3	1	6
14 ,,	16 ,,	0	0	1	5	1	8

Add 2d per foot super for glazing and putty.

Melbourne and Sydney prices.

Per Piece.	From s.	From d.	To. s.	To. d.
Common pulps on self coloured paper	0	4	0	9
Ditto do. on white paper	0	9	1	0
Papers, white or coloured prepared grounds	1	0	2	6
Ditto, satin papers, do.	1	3	4	6
Ditto, flock do., do.	3	0	5	6
Ditto, flock and gold. do.	6	6	15	6
Ditto, gold on plain or embossed satin grounds, white or tinted for drawing rooms, &c.	3	0	8	6
Ditto, gold on plain ultramarine, emerald, crimson, &c., plain or embossed satin	6	6	10	6
Marbles, Sienna lined or unlined ...	1	0	4	6
Marbles and woods, superior	3	6	6	6
Lining paper	1	0	1	6
Calico or canvas lining	2	6	3	6
Borders.				
Per Lineal Yard.				
Common, from 1 to 6 inches wide ...	0	1½	0	4
Rich colours, satin flock, plain gold, flock and gold, &c.	0	3	1	6
Decorations.				
Scenes in colours, imitation engravings, &c., for fire screens or panels, per piece	2	0	10	6
Panel borders (per yard) or corners to match, each	0	1	0	3
Each.				
Panel borders rich gold, flock or satin and gold	0	3	1	0
Ditto, corners to match	0	4½	1	6
Ceiling centres, 15 ins. to 42 ins. diam.	1	0	10	0
Wall centres, cameos, &c.	2	6	10	6
Ditto, medalion views	12	6	30	0
Statuettes on brackets, stands and pedestals, Ariel figures, &c., (grey) ...	3	0	12	6
Ditto do. (oak) ...	3	6	14	0

	s.	d.	s.	d.
Columns, with caps, bases, and extension, for lengthening column (grey) ...	5	6	8	6
Ditto do. (oak) ...	6	6	11	0
Scenery in sets, from 12 to 25 lengths	£4	10s	£21	0s.

LABOUR *per piece.*

Straining canvas, including tacks and slipping	1	3	1	9
Hanging lining paper	0	9	1	0
Ditto common paper	1	0	1	3
Ditto satin paper	1	3	1	6
Ditto flock	1	4	1	9
Pumicing lining paper	0	2	0	3
Hanging borders, per dozen yards ...	1	0	1	6
Sizing 2 coats, and varnishing marble paper	1	9	2	6
Ditto, do., and twice varnishing	2	6	3	3

Extras.

Hanging horizontal papers	0	3	0	4
Ditto do. Sienna in separate marble blocks and lining to imitate stone work	0	9	1	0
Ditto, ordinary decorations	3	0	4	0

For superior decorations no prices can be quoted, since the cost of hanging entirely depends on the design and the number, size, and shape of the panels.

A piece of paper is 36 feet long by 21 inches wide, and contains 63 sup. feet, or 7 sup. yards, but the ends are generally injured by packing, exposure, unrolling, &c.; and in papering there is also a further waste in matching the ends; and, according to the size of the pattern, an allowance must therefore be made of from 5 to 9 super. feet in calculating the number of pieces required for a given area. Any portion of a piece required is charged as a whole piece.

N.B.—The labour on the above is reckoned at from 1s. 6d. to 1s. 9d. per hour for Paperhangers, and from 1s. 9d. to 2s. per hour for Decorators.

DEAL MOULDINGS.

Including fixing per lineal yard.

	½ in.		¾ in.		1 in.		1¼ in.		1½ in.		1¾ in.		2 in.		2½ in.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Black polished	0	5	0	7	0	9	0	10	1	0	1	1	1	4	1	9
Black and gold	0	8	0	11	1	2	1	6	1	8	1	10	2	2	2	9
Gold	0	11	1	1	1	7	2	1	2	4	2	7	2	11	3	9

Writing Complete.

Per letter per inch in height.

	s.	d.
Plain painted letters	0	1
Egyptian or sunk letters	0	2
Gold, plain or bronze, with gilt edges	0	4
Ditto, Egyptian or sunk	0	5
If shaded, add	0	1
Double ditto, add	0	1
If to imitate projecting letters, add	0	2
Writing on glass, plain burnished gold, with two shades, on coloured ground	0	6
Ditto with three shades, ditto	0	8
Embossing and gilding ornamental letters, with two shades, on coloured ground	1	6

For German text, old English, ornamental or ancient writing, add 50 per cent. to the above.

Stone Carving, which is generally fixed at a considerable height above the observer, does not require that degree of finish or delicacy of outline required in wood carving, which is generally fixed much nearer to the eye. In all ornamental work the time required to model or carve a given *Piece* depends materially upon the degree of finish, or *minutiæ*, aimed at. In both stone and wood carving I have reduced the prices, because the system of tendering now generally adoptod will not admit of a superior class of work at current rates of wages.

In Estimating.—To the cost of carving stone capitals, as given on page 33, add 8 per cent. for the stone, and preparing and setting same, in addition to profit on the whole.

Colour. The lighter the colour of the ornament, or enrichment, the more readily is any defect observed. For this reason a Corinthian capital which might be passable if carved in cedar or blackwood, would look coarser in Huon or Clear Pine, and would be scarcely, if at all, passable in Plaster of Paris, or equally white composition.

Tar, Chunam, &c.

Tarring.—One gallon of tar with 1lb of pitch will cover one square, or 11 super. yards.

Coal Tar, per gallon, from 2d. to 6d.

Caulking.—One cwt. of oakum will do 700 lineal feet of seams in $2\frac{1}{2}$ inch planking, but on good work, with fine seams, half this quantity will suffice.

Chunam.—3 bushels fine sifted lime and 6 gallons best thin black oil is required for one square of Chunam.

Patent Lead Pipes.

per lin. yard, at 35s per cwt. or $3\frac{3}{4}$ per. lb.

Diameter. inches	Light. lbs.	s.	d.	Medium. lbs.	s.	d.	Strong. lbs.	s.	d.	Soldered joints, each. s.	d.
$\frac{1}{2}$	3	0	$11\frac{1}{4}$	$4\frac{1}{2}$	1	5	6	1	$10\frac{1}{2}$	2	0
$\frac{3}{4}$	6	1	$10\frac{1}{2}$	7	2	$2\frac{1}{4}$	9	2	$9\frac{3}{4}$	2	6
1	8	2	6	10	3	$1\frac{1}{2}$	12	3	9	2	9
$1\frac{1}{4}$	10	3	$1\frac{1}{2}$	12	3	9	16	5	0	3	0
$1\frac{1}{2}$	12	3	9	16	5	0	20	6	3	3	3
2	18	5	$7\frac{1}{2}$	24	7	6	30	9	$4\frac{1}{2}$	3	6

Cost of Laying Service Pipes.

Say 30 yds. $\frac{3}{4}$ inch patent lead pipe, as above, for high pressure, at 2s. $9\frac{3}{4}$d. per yard	£3	4	4
Labour in laying down pipe, including opening ground, boring main, cutting through and making good to walls, floors, &c., 30 yds. at 1s. per yard	1	10	0
Say 5 joints, at 2s. each, as above	0	10	0
Stop-cock, 4s. 6d.; Bib-cock, 4s. 6d.; Ferrule for main, 2s. 4d.	0	11	4
	£5	15	8

By altering the above as required, any estimate may be made for any length or size of Pipe, &c., the Labour in laying down being about the same for any ordinary size pipe, either lead or galvd. iron.

For prices of black and galvanized iron pipes see page 103.

Medium pipe is generally used in Sydney, but *Strong* pipe in Melbourne on account of the greater water pressure from the Yan Yean Reservior.

Laying Lead,

Including solder, hooks, nails, &c. per cwt.

Laying gutters or flats, or lining cisterns	4	0
Ditto hips or ridges, or lining small cisterns, &c....	5	0
Ditto step and apron flashings, ...	8	0
Ditto, hips, ridges, flashings, &c., to dormers or turrets	9	0
Add for every 10 feet above 30 feet high	0	6

Sheet Lead per cwt.

3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5 and 6 lbs. per sup. foot, per roll, ...	30	0
Ditto, do. if cut to sizes	32	0

Force and Lift Pumps. *Each.*

American brass force and lift pumps on planks,

2 in.	2½ in.	3 in.	3½ in.	4 in.
£6	£6 10	£7 10	£8 10	£10

Douglas's American lift pumps, Melbourne prices.

Nos.	1	2	3	4	5	6
	18s	20s	21s	23s	27s	32s

Cast Iron Spouting, &c.

Per lineal foot, in 6 feet lengths.

	2 in.	2½ in.	3 in.	3½ in.	4 in.	4½ in.	5 in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Spouting, O.G ...	...	...	...	...	0 8	0 9	0 10
Do. half round...	...	...	...	0 5	0 6	0 7	0 8
Down pipes	0 8	0 9	0 10	0 11	1 0	1 1	
Heads, each	3 0	3 6	3 9	4 0	4 6		
Shoes, each	2 3	2 6	2 9	3 0	3 6		
O.G. angles, each	...	...	...	...	3 0	3 3	3 6
Half round angles, each			2 9	3 0	3 3		
Clips, each ...	...	...	...	0 9	0 10	0 11	1 0

For weight of the above see Weight of Building Materials.

Galvanised Iron Pipes and Gutters.

No 26 gauge, per foot run.

Size inches.	Down Pipes s. d.	Half round slip jointed. s. d.	O.G. gutters. s. d.	Heads each. s. d.	Shoes each. s. d.
2	0 4	....	....	2 3	1 2
2½	0 5	....	....	2 6	1 3
3	0 6	....	....	3 0	1 4
3½	0 7	0 4	0 4½	3 3	1 5
4	0 8	0 4½	0 5	3 6	1 6
5	0 10	0 5	0 6	5 0	1 8
6	....	0 6	0 7	....	....

Per Dozen.

Spikes and tubes 2s. 6d.; Down pipe hooks 3s.; Brackets 3s.

Ridge Capping, No. 26 Gauge.

12 ins.	14 ins.	15 ins.	16 ins.	18 ins.
5d.	6d.	7d.	8d.	9d.

In measuring eaves gutters, for every angle reckon one foot extra of gutter, or else add the price of the angles separately.

Closet and Lavatory Apparatus.

	£	s.	d.
Tylor and Son's patent closet apparatus, complete	3	0	0
Syphon trap of 8lbs. lead for do...		15	0
Patent closet apparatus complete, from £3 to	6	0	0

The last item gives the range of prices for the great variety of closet apparatus imported. The chief makers are Hayward, Tyler, and Sons, Lambert and Sons, and Warner and Sons.

Doultons and Co.'s enamelled stoneware registered closet pans, with syphon		15	0
Delf ditto, with syphon	1	0	0
W. C. Cistern (as adopted by the Sydney Corporation) of best gal. iron, water waste preventor, ball tap, glazed earthenware pan and trap complete. ... ... £3 to	3	10	0
Cast Iron ditto ditto	4	10	0
Pine cistern lined with lead, overflow, &c, complete	4	0	0
Urinals earthenware and trap with tap, supply and waste pipe	3	10	0
Ditto self-acting with treadle-water waste preventor	5	10	0
Wash basins, with overflow holes, 14 in. diam.		12	0
Ditto, do 16 in. do. ...		15	0
Outside basin, of 5lbs. lead, for do. 10s. to		15	0
Pull and valve, for do.		10	0
12 inch blue and white W. C. basin		9	6
Water closet valves		7	0
New tinned copper basin		5	0
Brass crank and lever		5	0

PATENT PARAGON EARTH CLOSETS.

	£	s.	d.		£	s.	d
Deal closets complete, with pull action	3	10	0	to	4	15	0
Cedar ditto do. do. ...	5	15	0	to	6	10	0
Deal double action self-acting earth closets	4	5	0	to	5	10	0
Cedar ditto do.	6	0	0	to	6	15	0
Lead urinal shoots fitted to the above					1	0	0
Galvanized iron ditto...						10	0

Laying on Gas, viz.—	£	s.	d.
Connecting with main and metre, about 20 feet of street service pipe, and all necessary cocks, iron and tin pipes or tubes fixed to receive Gasaliers, at per room	1	10	0
If over ten lights, at per room, £1 to	1	5	0

N.B.—Fittings, Chandeliers, &c., generally supplied or chosen by the Proprietor.

COOKING STOVES, Jean's best patent Gas cooking stoves, for family use ...	11	0	0
Medium size, ditto	7	0	0
Laundry Gas stoves	1	5	0
Small boiler stoves, for nurseries, &c. ...	1	1	0

These stoves are much used throughout the Colonies, and are generally liked for the many advantages they possess over ordinary stoves.

Vapor baths for Invalids, heated by gas	5	0	0
Bath pillows for ditto	1	1	0
Baths for Schools, &c., heated by gas in 20 minutes (Jean's Patent)	15	0	0
Asbestos stoves for drawing rooms, bedrooms, offices, &c., heated by gas, and noted for cleanliness and economy, fitted up complete, ... per stove £4 to	6	10	0
Gas Engines for working lathes, coffee mills, jig saws, and light joinery, from	120	0	0
Marshall's *Portable gas works* for tallow gas (suitable for country mansions, hotels &c.,) with fittings complete from £42 to	195	0	0
Approximate cost of fixing from £5 to	35	0	0

Capacity of Gasholders from 60 to 1500 cubic feet.

NOTE.—Seven pounds of tallow will make one hundred cubic feet of Gas, each burner consuming 1½ cubic feet per hour as compared with 4 cubic feet of Coal Gas.

Gasholders of 500 cubic feet and upwards require to be built into a circular brick tank, a specification for which is supplied with the Apparatus.

GAS METERS.—*Each.*

3 light.	5 light.	10 light.
£2 10	£3 5	£4 10

The meters are always supplied and fixed by the Gas Companies, but these are the average prices.

CHANDELIERS, &c.—*Each.*

Single light gas brackets, from	.	£0	3	6	upwards.	
Double jointed ditto,	do.	.	0	6	0	„
2 light water joint lamps	do.	.	2	0	0	„
3 ditto chandeliers	do.	.	3	0	0	„
4 ditto do.	do.	.	8	0	0	to £50
6 ditto do.	do.	.	16	0	0	upwards.

LABOUR in laying or fixing and jointing Gas Pipes from main to metre, from 4d. to 6d. per lineal foot, according to quantity.

BATHS (*hot and cold.*)

	£	s	d
High pressure Boilers for kitchen range to supply hot water ... ... from £7 to	10	10	0
Cost of setting same ... ... from £3 to	4	10	0
Cedar baths lined with lead and fitted with shower tap and waste pipe, hot and cold water appliances complete	15	0	0
Turkish shower, most approved, fitted to same	12	0	0
Hot and cold water cisterns to supply, bath, lavatory, kitchen and wash house	10	0	0
Wash hand basin fitted with hot and cold water, from	5	0	0
Galvanised iron bath, 24 gauge, each	2	5	0
Plug and washer, with chain	0	3	0
Copper shower, and stop cock for same	0	17	6
Cold water tap and hot water tap	1	2	6
Turk's head, zinc faced shower, fitted	1	10	0
Slate Bath, full size, including waste and overflow pipes, with fly nuts and unions for lead connections	15	0	0
Marble Baths, full size, with brass connections for supply, waste, and overflow pipes	20	0	0
Enameled iron baths, fitted with pipes, &c., complete, ... £15 to	20	0	0
Porcelain bath, with all connections in ornamental brass, and pipes complete	25	0	0
Cedar baths, lined with lead, full size, with square or oval ends, fitted complete	10	0	0

WATER METRES.—*Each.*

½ in.	¾ in.	1 in.	1½ in.	3 in.	4 in.
£4 10.	£5 10.	£6 10.	£10	£20	£25

REVISED LIST OF WROUGHT IRON GAS, STEAM, AND WATER TUBES AND FITTINGS.

Adopted by the Iron Tube Trade, Birmingham, May 25th, 1871. Accepted by the Trade of Melbourne, Sept. 1, 1871,

INTERNAL DIAMETER ...	⅛	¼	⅜	½	¾	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3½	4
TUBES.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Tubes, from 2 to 14 ft. long...pr. ft.	0 2½	0 3	0 3½	0 4½	0 6	0 8	0 11	1 2	1 6	1 9	2 6	3 3	4 0	4 6	5 6	7 0
Long Screws 12 to 23 ins. ... each	0 5	0 7	0 9	0 11	1 2	1 6	2 0	2 6	3 3	4 0	5 6	7 0	8 6	10 0	12 6	15 6
Bends ... ... „	0 5½	0 6½	0 7	0 8	0 11	1 3	1 9	2 3	3 3	4 3	6 6	10 0	12 0	16 0	25 0	32 6
Springs, not socketed ... „	0 4	0 5	0 6	0 7	0 9	0 11	1 4	1 8	2 6	3 3	5 6	7 6	10 0	12 0	19 0	26 0
FITTINGS.																
Elbows wrought iron ... each	0 6	0 6½	0 7	0 8	0 10	1 2	1 9	2 3	3 0	3 6	5 6	8 6	11 0	14 0	22 0	28 0
Tees ... ... „	0 6	0 6½	0 7	0 9	1 0	1 3	1 9	2 6	3 0	3 9	6 0	9 6	12 6	16 6	24 0	30 0
Crosses... ... ... „	0 10	1 0	1 0	1 5	1 9	2 3	3 0	3 6	4 6	5 3	10 6	16 0	21 0	30 0	42 0	50 0
Plain sockets ... ... „	0 1½	0 1½	0 2	0 3	0 3½	0 4	0 6	0 7	0 9	1 0	1 6	2 6	3 0	3 6	5 0	6 0
Diminished Sockets ... ... „	..	0 3	0 4	0 5	0 6	0 7	0 9	0 11	1 1	1 3	2 0	3 0	4 0	5 0	7 0	9 0
Flanges ... ... „	0 8	0 9	0 10	1 0	1 2	1 4	1 6	1 9	2 0	2 6	3 9	5 0	6 9	8 6	10 0	11 6
Caps & Plugs... ... ... „	0 2	0 3	0 3	0 4	0 5	0 6	0 8	0 10	1 0	1 3	2 0	2 6	3 6	4 9	7 0	10 0
Backnuts & Nipples ... „	0 1	0 2	0 2	0 3	0 3½	0 4	0 6	0 8	0 10	1 0	1 9	2 3	3 0	3 6	4 6	5 6
Round Elbows ... ... „	0 7	0 7	0 8	0 9	1 0	1 4	1 11	2 6	3 4	3 10	6 6	10 0	13 0	16 0	25 0	32 0
Iron Main Cocks ... ... „	2 3	2 3	2 9	3 6	4 6	6 6	8 6	11 0	14 0	18 0	27 0	36 0	44 0	50 0	75 0	90 0
Ditto, with Brass Plugs ... „	..	..	4 6	5 6	7 6	10 6	15 0	19 6	25 0	32 0	47 0	60 0	90 0	110 0	140 0	190 0
Round-Way Iron Cocks ... „	..	..	3 6	4 0	5 6	7 6	10 0	13 0	17 6	22 0	38 0	54 0	62 0	70 0	100 0	160 0
Ditto, with Brass Plugs ... „	..	..	5 0	6 6	9 0	13 0	19 0	28 0	36 0	42 0	60 0	85 0	105 0	120 0	180 0	280 0

N.B.—The present prices in Melbourne and Sydney are one half the above for Black Iron, and one fourth less than the above for Galvanized Iron,

McComas Water Lifters.—These water lifters are an improvement on the Californian pump; they are simple, durable, efficient, and economical, and might be used to great advantage in lifting waters from Foundations, Shafts, Cuttings, Tanks, &c., in course of construction, as they can be erected, lengthened, repaired, or removed by any Mechanic.

Their power may be estimated from the fact that—

One Man can raise 3600 gallons per hour 15 feet high.

One Horse can raise 27,000 gallons per hour 10 ft. high.

Ins. Bore.	*Power & Height.*	*Quantity.*	*Price with frame.*
2½	One man 15 feet	3600 gal per hour	£18
3½	Two men 12 feet	7200 ditto	£24
5	One horse 20 feet	18,000 ditto	£44
7	One horse 8 feet	48,000 ditto	£48
5	Portable complete	30,000 ditto	£130
7	Ditto	70,000 ditto	£150

These Water Lifts may be obtained in Melbourne or Sydney.

Contractor's pitcher pump, from 3½ to 6ins. diameter with 25 feet of pipe from £5 to £10.

Warner's best 3½ inch brass barrel force and lift pump with air vessel and delivery tap to supply yard cistern and house including 100 l. ft. of 2 inch and 1½ inch galvanized iron pipe taps connections &c. complete £25.

Lift pump (4 inch) for house work, fixed in yard with 15 feet, gal. iron pipe from £2 10 to £4.

Wheel and pinion gear with cast iron frame £12.

Centrifugal Pumps.—These pumps like the Californian pump and McComas Water Lifter will raise water mixed with sand or clay without injury to the pump. They are made to work in a horizontal or vertical shaft with a pulley and endless band.

Suction pipes with elbow and foot valve also extra shafting can be had with the pumps.

Number of sizes ...	2	3	4	5	6	7	8	9
Size of discharge pipe inches ...	1½	2	2½	3	4	6	7	8
Capacity per minute in gals. ...	100	350	500	700	1000	2500	3000	4000
Price, Melbourne or Sydney	£6	13	16	18	24	36	48	58
Horse power (effective) 20 feet high	1	3½	5	7	10	25	30	40

HYDRAULIC RAM.—No. 4 size, requiring a water supply of from 2 to 8 gallons per minute, with Discharge pipe $\frac{1}{2}$ in. bore £4.

This is the most simple and effective machine for forcing a continuous stream of water by gravitation to a considerable altitude, saving the power required in using a force pump. It will work with even 18 inches fall of water and does not easily get out of order.

ZINC WORK.

Weight and price at per foot super. and per square.

No. of zinc gauge.....	8	9	10	11	12	13
Corresponding No. of Bir. wire gauge.....	26	25	24	23	22	21
Ounces per super. foot	$9\frac{3}{4}$	$10\frac{3}{4}$	13	$15\frac{1}{4}$	$17\frac{1}{2}$	$19\frac{3}{8}$
Pence, at $4\frac{1}{4}$d. per lb.....	$2\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{1}{4}$	4	$4\frac{3}{4}$	$5\frac{1}{4}$
Lbs. per square.....	61	68	82	96	109	123
Weight of sheets, 7ft x 3ft., in lbs.....	13	$14\frac{1}{4}$	17	20	$22\frac{3}{4}$	26

The first 5 gauges only are imported.

Price per cwt.

No. 8 at 40s. No. 9 at 39s. No. 10 at 38s.

Perforated zinc, No. 9 or 10 gauge, for safes, larders, ventilators, &c., per sup., foot. ... ... 0s. 8d.
Ditto by the sheet. do. ... ... 0s. 5d.

MEM.—If sheet or plumbic zinc contains any iron in its composition, it will not resist the action of the air, and is no better than damaged or inferior galvanised iron.

It is also essential that it should be perfectly malleable, or it will crack with too sudden changes of temperature; care must also be taken to allow for contraction and expansion, which may be effectually guarded against, if properly laid. The best test of its malleability, is to double the corners backwards and forwards, which ought not to crack it.

Good plumbic zinc forms an excellent *cheap substitute* for lead or copper in the lining of tanks, cisterns, urinals, gutters, or for covering ridges, hips, flats, &c.

THE LABOUR TO ZINC and galvanised iron are about the same.

CAST ZINC.

Corinthian capitals for 3 inch wood or iron columns. cast hollow and secured to top of shaft (Melbourne) each ... 6s 0d.
Castings in zinc or white metal if moulds are in stock, per lb 0s 8d.

VULCANISED INDIA RUBBER DELIVERY HOSE.

Three ply per lin. foot

¼ in.	¾ in.	1 in.	1¼ in.	1½ in.	1¾ in.	2 in.	2½ in.	3. in
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s d.	s. d.	s. d.
9	1 0	1 4	1 7	1 10	2 2	2 4	2 10	3 4

TUBING FOR GAS.—*Per foot.*

Internal diam.	¼in.	⅜ in.	½ in.	⅝ in.	¾ in.	⅞ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Vulcanised	5	7	8	9	10	1 2
Washers or joints for gas nd water pipes, *per lb.*,						
¼ thick, in.	3 in.	4 in.	5 in.	6 in.	8 in.	10 in.	12 in.
	s. d	s. d	s. d	s. d	s. d	s. d	s. d
Ditto, each	4	5	6	7	10	1 2	1 4

Sheet Rubber, from 1-16th to ½ in. thick, and 3 or 4 feet wide, *per lb.* from 3s. to 5s.

Vulcanised or mineralised India Rubber weighs from 6 to 9 lbs. per super. foot of one inch in thickness; this diversity in the weight is owing to the quantity of sulphur incorporated which varies according to the purpose for which it is applied. The North British Co., is about the best in the markets.

BELL-HANGING with porcelain dado, levers, zinc tubing, No. 17 gauge copper wire, cranks, and bell, complete per pull from 30s. to 35s.

COPPERSMITH'S WORK

Copper tube for lightning conductors ⅛ inch thick.

	in.	in.	in.	in.	in.	in.	in.	in.
External diam.	¾	⅞	1	1⅛	1¼	1½	1¾	2
lbs. per lin. foot.	0.94	1.14	1.33	1.51	1.69	2.08	2.42	2.87

The price per lb. is from 2s. 6d. for small, to 2s. for large sizes.

Diving apparatus complete, in Melbourne or Sydney, from £145 to £175.

WASHING COPPERS.

Gallons	18	20	25	30	35	40
Weight in lbs.. .	20	23	26	29	34	38

Present price 2s. per lb. in Melbourne or Sydney

	s. d.		s. d.
Brass castings, *per lb.*	1 6	to	1 8
Cast copper cramps, or other castings, per lb.	1 4	to	1 6
Sheet and bolt copper do. .	1 4		

WEIGHT OF COPPERS.

The Dimensions taken from the Lag to Brim; that is, the Diagonal from Top of Rim to the Bottom Edge.

Inches.	Gallons.	lbs.	Inches.	Gallons.	lbs.
9¾	1	1½	21	10	15
12½	2	3	21½	11	16½
14	3	4½	22	12	18
15½	4	6	22½	13	19½
16½	5	7½	23¾	14	21
17½	6	9	24	15	22½
18½	7	10½	24½	16	24
19½	8	12	25	17	25½
20¼	9	13½	25½	18	27

TEST FOR IRON.—A soft, tough iron, if broken gradually, gives long, silky fibre of leaden-grey hue, which twist together and cohere before breaking.

A medium, even grain, with fibres denser, good iron.

Badly refined iron gives a short blackish fibre on fracture, *very fine grain* denotes hard, steely iron, likely to be cold-short, and hard.

Coarse grain, with bright crystalised fracture, or discoloured spots, denotes cold-short, brittle iron, which works easily when heated, and welds well

Cracks on the edge of a bar are indications of hot-short iron.

Good iron is readily heated, is soft under the hammer, and throws out few sparks.

Iron remains bright if touched with nitric acid.

TEST FOR STEEL.—Good steel in its soft state has a curved fracture and a uniform grey lustre; in its hard state a dull, silvery uniform white.

Nitric acid will produce a black spot on steel: the darker the spot the harder the steel.

Cracks, threads, or sparkling particles denote bad quality.

Good Steel will not bear a white heat without falling to pieces, and will crumble under the hammer at a bright, red heat, while at a middling heat it may be drawn out, under the hammer, to a fine point. Care should be taken that before attempting to draw it out to a point the fracture is not concave, and should it be so, the end should be filed to an obtuse point before operating. Steel should be drawn out to a fine point and plunged into cold water; the fractured point should scratch glass.

To test its toughness, place a fragment on a block of cast-iron: if good, it may be driven by the blow of a hammer into the cast-iron; if poor, it will crush under the blow.

TAKING OUT QUANTITIES.—The weight in lbs. may be ascertained by multiplying the cubic inches of cast iron, wrought and hammered iron or steel, brass, copper, and lead, by 26, 28, 30, 32, and 41, respectively, and cutting off 2 figures to the right, the remainder being lbs.

TABLE *of the Weight of a Superficial Foot of various Metals, in lbs*

Names.	Thickness by the Birmingham Wire Gauge.												
	1	2	3	4	5	6	7	8	9	10	11	12	
Iron	12.50	12.00	11.00	10.40	8.74	8.12	7.50	6.86	6.24	5.62	5.00	4.38	
Copper ...	14.50	13.90	12.75	11.40	10.10	9.40	8.70	7.90	7.20	6.50	5.80	5.08	
Brass ...	13.75	13.20	12.10	11.00	9.61	8.93	8.25	7.54	6.86	6.18	5.50	4.81	
	Thickness by the Birmingham Wire Gauge.												
	13	14	15	16	17	18	20	22	24	26	28	30	
Iron	3.75	3.12	2.82	2.50	2.18	1.86	1.54	1.25	1.00	0.80	0.64	0.50	
Copper ...	4.34	3.60	3.27	2.90	2.52	2.15	1.78	1.45	1.16	0.92	0.74	0.58	
Brass ...	4.12	3.43	3.10	2.75	2.40	2.04	1.69	1.37	1.10	0.88	0.70	0.55	
	Thickness, in parts of an inch.												
	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	
Iron	2.5	5.	7.5	10.	12.5	15.	17.5	20.	25.	30.	35.	40.	
Copper ...	2.9	5.8	8.7	11.6	14.5	17.4	20.3	23.2	28.9	34.7	40.4	46.2	
Brass ...	2.7	5.5	8.2	10.9	13.6	16.3	19.0	21.8	27.1	32.5	37.9	43.3	
Lead ...	3.7	7.4	11.1	14.8	18.5	22.2	25.9	29.6	37.0	44.4	57.8	59.2	

BRASS COCKS, &c., FOR WATER OR STEAM,

Exclusive of fixing. *Each.*	½ in.		¾ in.		1 in.		1¼ in.		1½ in.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Square way bib or stop cocks	4	0	6	0	8	6	15	0	18	0
Round way cocks	5	0	7	6	10	0	18	0	22	0
Range boiler cocks with screw bottom	5	6	7	6	10	6				
High pressure bib or stop cocks	4	6	6	0	9	6	25	0	35	0
Brass tubing at 1s. 9d. per lb.	0	9	1	0	1	4	1	8	2	0

OUTSIDE BLINDS.

Melbourne and Sydney prices per foot super.

	s.	d.
Canaletti Blinds, linen tick, in panelled and moulded cases, painted complete	2	4
Florentine Blinds ditto do.	2	7
Spanish blinds ditto do.	3	1
Oriental Blinds for circular headed windows ditto	3	7
Venetian blinds with tapes and cords, in panelled moulded cases painted complete	2	4

Small sizes less than 20 sup. feet, charged as 20 sup. feet.

Inside Blinds per foot super.

Venetian Blinds, painted green, buff or drab from 1s. to	1	3
Sizes under 18 super feet charged as 18 feet.		
Gauze wire and perforated zinc Blinds in cedar polished frames		
Dwarf Venetian Blinds painted in polished cedar frames	7	0

Sizes under 6 sup. feet charged as 6 feet.

Price of square and round Iron, *per foot run.*

At 2d. per lb., or 18s. 8d. per cwt.

In.	*Square.*		*Round.*		*In.*	*Square.*		*Round.*		*In.*	*Square.*		*Round.*	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
¼	0	0½	0	0½	1⅛	0	8½	0	7	2	2	3	1	9
⅜	0	1	0	1	1¼	0	10½	0	8½	2⅛	2	6	2	0
½	0	2	0	1½	1⅜	1	1	0	10	2¼	2	10	2	2½
⅝	0	2½	0	2	1½	1	3	1	0	2⅜	3	2	2	6
¾	0	4	0	3	1⅝	1	6	1	2	2½	3	6	2	9
⅞	0	5	0	4	1¾	1	8½	1	4	2⅝	3	10	3	0
1	0	6½	0	5	1⅞	1	11½	1	6½	2¾	4	2½	3	3

For flat bars multiply the above prices by the width.

CAST IRON : *Melbourne & Sydney prices exclusive of patterns and fixing per cwt.*

	s.	d.
Furnace bars, sewer grates, and area gratings	14s. to 16	0
Furnace doors and frames, complete ...	18s. to 22	0
Girders, columns, water and gas pipes ...	12s. to 16	0
Railings and lamp posts	18s. to 24	0
Cast iron plates for floors, 3-16 in. to 5-16	12s. to 16	0
Large iron tanks complete	18s. to 20	0
Roof castings, *viz.*, rafters, struts, heads, shoes, couplings, louvre and ridge standards, cappings, &c.	20s. to 26	0
Cast iron steps and risers to geometrical steps, the riser ornamental, and the treads grooved, fitted with wrought iron handrail and ballusters	28s. to 30	0
Per lin. foot fixed.		
Balcony rails, rich pattern, fitted with wrought iron top rail and standards, fixed complete	6s. to 8	0
Ditto, plain Gothic, or other patterns ...	5s. to 7	0
Ditto very richly ornamented	7s. to 9	0
Crestings or friezes for verandahs various patterns	2s. to 4	0
Pilasters plain or ornamental 7 to 9 feet long each	20s. to 40	0
Ditto ,, ,, 9 to 12 ,,	30s. to 50	0
Brackets ornamental 21 to 30 inch sides each	6s. to 20	0
Cantilevers for balconies	18s. to 35	0
Balusters ornamental for staircases ...	3s. to 5	0
Newels do 4 to 8 ins. diam. ...	8s. to 25	0

Cast iron £5, & Colonial coke £3 per ton.

WROUGHT IRON.

Per cwt. exclusive of fixing.

Wrought bar, round, or half round iron...	13s. to	14	0
Hoop iron, common	14s. to	16	0
Ditto best charcoal	18s. to	20	0
Sheet iron, 10 to 28 gauge	15s. to	17	0
Plate iron, best charcoal plate $\frac{1}{8}$ in. to $\frac{5}{8}$ inch thick	16s. to	21	0
Angle T and H iron	15s. to	16	0
Chains for crab winches, &c.	21s. to	24	0

WROUGHT IRON, *continued.* *Fixed per lb.*	From. s.	d.	To. s.	d.
Square ballusters			0	4
Drawn ballusters, with straps to pattern, and countersunk holes	0	5	0	6
Iron hand rail and ballusters, including fixing and lead	0	6	0	7
Light chains, with staples and fastenings, for posts	0	7	0	8
Unframed railing, inch bars, fixed 4d., do. framed			0	5
Framed gates, &c., in railing, fixed ...	0	6	0	7
Lamp irons, with braces or stays and straps, framed			0	7
Guard bars, with strap ends, unframed, for windows			0	4
Ditto, with cross rail, ... ditto			0	5
Guard bars with two rows of spikes ...	0	6	0	7
Strong brackets, framed, with braces ...	0	7	0	9
Strong squares drawn taper, with chamfered and countersunk holes	0	8	1	0
Iron work for pumps	0	7	0	8
Casements with saddle bars	0	9	1	0
Shop shutter bars	0	5	0	6
Joints to ditto, with mortices and plates ...	0	6	0	9
Frames and doors, with moulded panels, fitted with rollers and plates	0	6	0	8
Making, fitting and fixing large plate girders for bridges, &c. ... ... per cwt.	30	0	36	0
Ditto, lattice girders or large tanks* ...	32	0	38	0
Ditto, small box or plate girders, or small plate iron tanks, well caulked*	33	0	40	0

* N.B.—PLATE IRON TANKS cost about the same by weight as Girders, with the addition of the cost of caulking, which is about equal to riveting. The sides of the plates should not butt as in girders, but should lap, and be double riveted, by which means much labour is saved, and the joints effectually caulked: this is almost impossible when the plates butt, even if the edges are shot or planed.

The present wages of Moulders are 2s.; Blacksmiths, 1s. 4d.; Fitters, 1s. 4d.; and Strikers and Holders-up, 10d. per hour.

TABLE of the weight of a lineal foot of flat Bar Iron, in lbs.

Breadth in inches.	Thickness in parts of an inch.								
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1	·84	1·04	1·25	1·46	1·67	2·09	2·51	2·92	3·34
$1\frac{1}{8}$	·94	1·17	1·41	1·64	1 88	2·35	2·82	3·29	3 76
$1\frac{1}{4}$	1·04	1·31	1·57	1·83	2·09	2·61	3·13	3·65	4 18
$1\frac{3}{8}$	1·15	1·44	1·72	2·01	2 30	2·87	3·44	4·02	4·59
$1\frac{1}{2}$	1·25	1·57	1·88	2·19	2·50	3·13	3·76	4·38	5·01
$1\frac{5}{8}$	1·36	1 70	2·04	2·37	2·72	3·39	4·07	4·75	5·43
$1\frac{3}{4}$	1·46	1·83	2·19	2·56	2 92	3·65	4 38	5 11	5·85
$1\frac{7}{8}$	1 57	1·96	2·35	2·74	3·13	3·91	4·70	5·48	6 26
2	1·67	2·09	2·51	2 92	3·34	4·18	5·01	5·85	6·68
$2\frac{1}{4}$	1·88	2·35	2·82	3·29	3·76	4·70	5·64	6·58	7·52
$2\frac{1}{2}$	2·09	2·61	3·13	3·65	4·18	5·22	6·26	7·31	8 35
$2\frac{3}{4}$	2·30	2·87	3·44	4·02	4·59	5·74	6·89	8·04	9·19
3	2·51	3·13	3·76	4·38	5·01	6 26	7·52	8·77	10·02
$3\frac{1}{4}$	2 72	3·39	4·07	4 75	5·43	6 78	8·14	9·50	10·86
$3\frac{1}{2}$	2·92	3·65	4·38	5·11	5·85	7·31	8·77	10·23	11·69
$3\frac{3}{4}$	3 13	3·91	4·70	5·48	6·26	7 83	9·39	10·96	12·53
4	3 34	4·18	5·01	5 85	6·68	8 35	10 02	11·69	13 36
$4\frac{1}{4}$	3·55	4·44	5·32	6 21	7·10	8·87	10 65	12·42	14·20
$4\frac{1}{2}$	3·76	4·70	5·64	6·58	7·52	9·39	11 27	13·15	15·03
$4\frac{3}{4}$	3 97	4·96	5·95	6·94	7·93	9·92	11·90	13·88	15·86
5	4·18	5·22	6·26	7·31	8·35	10·44	12·53	14·61	16·70
$5\frac{1}{4}$	4·38	5·48	6·58	7·67	8·77	10·96	13·15	15·34	17 54
$5\frac{1}{2}$	4·59	5·74	6·89	8·04	9·19	11·48	13·78	16·07	18·37
$5\frac{3}{4}$	4·80	6·00	7·20	8·40	9·60	12 00	14·40	16·80	19·20
6	5·01	6·26	7·52	8·77	10 02	12·52	15·03	17·54	20·04

WROUGHT IRON.

Per lb. fixed.	From. s.	From. d.	To. s.	To. d.
Columns, including caps and bases ...	0	$2\frac{1}{2}$	0	$3\frac{1}{2}$
Chimney and bearing bars	0	3	0	$3\frac{1}{2}$
Ties and straps in floors and roofs, including nails and staples	0	4	0	5
Twisted ditto	0	5	0	6
Screw bolts, nuts and washers, and King-post stirrups	0	5	0	6
Pile shoes, with straps and nails ...	0	4	0	5
Framed grating for sewers and ...			0	4
Cradle bars, framed, 4d., ditto, trussed, with screws and nuts	0	5	0	6

TABLE exhibiting the weight of a lineal foot of square and round Bar Iron.

Side and diam. in inches.	Square in lbs.	Round in lbs.	Side and diam. in inches.	Square in lbs.	Round in lbs.	Side and diam. in inches.	Square in lbs.	Round in lbs.
1/4	.21	.16	1 1/8	7.52	5.91	3 1/8	40.92	32.17
5/16	.33	.26	1 1/8	8.83	6.93	3 3/8	43.89	34.47
3/8	.47	.37	1 3/8	10.23	8.04	3 3/8	46.97	36.90
7/16	.64	.50	1 7/8	11.74	9.22	3 7/8	50.15	39.39
1/2	.84	.66	2	13.36	10.50	4	53.44	41.98
9/16	1.06	.83	2 1/8	15.08	11.85	4 1/8	56.83	44.64
5/8	1.31	1.03	2 1/4	16.91	13.28	4 1/4	60.33	47.39
11/16	1.58	1.24	2 3/8	18.84	14.80	4 3/8	63.93	50.21
3/4	1.88	1.48	2 1/2	20.88	16.40	4 1/2	67.64	53.13
13/16	2.21	1.73	2 5/8	23.12	18.15	4 5/8	71.45	56.11
7/8	2.56	2.01	2 3/4	25.26	19.84	4 3/4	75.36	59.19
15/16	2.94	2.31	2 7/8	27.61	21.68	5	83.51	65.59
1	3.34	2.62	3	30.07	23.65	5 1/4	92.46	72.62
1 1/8	4.23	3.32	3 1/8	32.62	25.62	5 1/2	101.04	79.37
1 1/4	5.22	4.10	3 1/4	35.28	27.71	5 3/4	110.43	86.73
1 3/8	6.32	4.96	3 3/8	38.05	29.88	6	120.24	94.61

Weight of Cast Iron Pipes.

Note.—The inch pipes are 3½ feet long, the 1½ inch 4½ feet long, the 2 and 2½ inch are 6 feet long, and the other sizes 9 feet long.

Bore.	Thick.	Weight.	Bore.	Thick.	Weight	Bore.	Thick.	Weight.
In.	In.	cwt. qrs. lbs.	In.	In.	cwt. qrs. lbs.	In.	In.	cwt. qrs. lbs.
1	¼	0 0 12	5½	½	2 2 0	12	¾	7 3 20
	⅝	0 0 21		⅝	3 0 18		1	10 3 0
1½	¼	0 0 21		¾	3 3 7	13	¾	8 2 7
	⅜	0 1 4	6	½	2 2 21		1	11 2 12
2	¼	0 1 8		⅝	3 1 17	14	⅝	7 2 16
	⅜	0 2 0		¾	4 0 16		¾	9 1 0
2½	⅜	0 2 10		1	5 2 20		1	12 1 14
	½	0 3 10	7	½	3 0 7	15	¾	9 3 7
3	⅜	1 0 6		⅝	3 3 20		1	13 0 26
	½	1 1 12		¾	4 3 5		1¼	16 3 5
	⅝	1 3 6		1	6 2 4	16	¾	10 1 20
3½	⅜	1 0 21	8	⅝	4 1 25		1	14 0 8
	½	1 2 14		¾	5 1 18		1¼	17 3 14
	⅝	2 0 8		1	7 1 16	18	1	15 2 24
4	½	1 3 12	9	⅝	5 0 4		1⅛	17 2 26
	⅝	2 1 12		¾	6 0 2		1¼	20 0 2
	¾	2 3 21		1	8 0 26	20	1	17 1 15
4½	½	2 0 4	10	⅝	5 1 26		1¼	21 3 24
	⅝	2 2 14		¾	6 2 14	22	1	18 3 18
	¾	3 0 21		1	9 0 8		1¼	24 0 23
5	½	2 1 10	11	⅝	6 0 11	24	1	20 3 5
	⅝	2 3 17		¾	7 1 7		1⅛	23 2 4
	¾	3 1 24		1	9 3 20		1¼	26 1 10

Cast iron pipes less than 3 ins. diam. have been almost superseded by malleable iron pipes.—See p. . for prices of wrought iron pipes.

Weight of malleable iron pipes per lineal yard.

Bore or diam. ins. ...	¾	1	1¼	1½	1¾	2
lbs. per lin, yard ...	4½	8	10	12	14	15

Ends of Pipes.—The 2 flanges of a flange pipe, or the faucit end of a socket pipe, are equal in weight to, from 6 to 12 ins. of the pipe.

Imported socket pipes, for high pressure, are about £12 per ton, including bends and junctions.

For the price of Melbourne and Sydney made pipes, see p. 110.

Jointing Pipes.—Lead for joints of socket pipes, run in upon *gasket* or hemp packing :

Diam., ins. ...	3	4	6	9	12	15	18
Lead, lbs. ...	4	6	11	18	28	38	50

Laying Pipes.—The cost of laying cast iron pipes is about the same as for earthenware pipes, with the cost of lead and *gasket* (used in the jointing) added.—See p. 21.

Plain Sheets for working up; 26 gauge is mostly used. The sheets are 6ft. long by 24, 30 and 36 inches wide, and contain 220, 180 and 150 sheets per ton respectively.—Number 24 and 28 gauges are also imported.

Corrugated Iron in Sheets 4½ft., 5ft., 6ft., 7ft., 8ft., 9ft., and 10ft. long by 2 feet 3 inches wide; with 3 inch corrugations, or 2 feet wide with a lap of one corrugation, which is sufficient for fences and Gothic roofs, but a lap of two corrugations is required for ordinary roofs, with an end lap of 6 inches.

Gauges imported.	24	26	28
Lbs. per square, lapped 2 corrugations ...	168	122	113
Lbs. per square, lapped 1 corrugation ...	140	108	99
Squares per ton, ditto ...	16.00	20.74	22.62
Ditto do. 2 ditto ...	13.33	18.36	19.82

This calculation is made from the average number of sheets per ton, and is exclusive of waste in cutting which would rarely exceed 5 per cent.

SHEETS PER TON.—These vary slightly with different makers but the following is the average of several comparisons :—

Gauge	5 feet	6 feet	7 feet	8 feet	9 feet
24	160	138	116	102	88
26	222	188	160	140	124
Ditto, Morewood's or Braby's	220	184	158	137	120
Ditto A1 Crown Brand	220	180	156	136	120
28 Gauge ordinary	238	204	176	152	132

SHEETS IN HALF TON CASES *of the best brands.*

	5 ft.	6 ft.	7 ft.	8 ft.	9 ft.	10 ft.
24 guage ...	80	69	56	51	44	40
26 guage ...	110	90	78	68	60	53

The cases weigh from 28 to 50lbs.

The present prices for 26 gauge range from £28 to £32 per ton.

24 guage is worth about £1 less, and 28 gauge £2 more than 26 gauge.

The 10 feet sheets are worth about £4 per ton more than the short sheets, and are generally 26 guage.

Plain galvanized iron sheets per ton £40 to £46.
Galvanized iron screws 1½ in., 1¾ in., 2 in., and 2½ in. per lb. ... 9d.
Lead Washers for ditto ditto ... ... 7d.
Galvanized iron bolts and nuts per gross ... ... 7s.

GALVANIZED IRON FENCING.

Mesh wire for fences, &c., from ½ in. to 3 in meshes, made with wire from No. 16 to 20 gauge, in rolls, from 1 to 4 feet wide, the price varying from 9d. to 5s. per lin. yard, according to width, size of mesh, and gauge of wire.

Labour only, *per square.*

	s.	d.
Buildings covered with corrugated iron from No. 24 to 28 gauge, 3-inch corrugations	14	0
Fences, do., 6 feet sheets, nailed bottom, top, and middle at every third corrugation, with 3 inch nails	7	0

In these 2 items the wooden framework for building and fence is supposed to be already prepared.

Present net wages of Iron worker, per hour, 1s 6d.

Round Galvanized Iron Water Tanks.

Fitted with Taps and Wastepipes.

	d.
Under 100 galls. .. .. per gal	$4\frac{1}{4}$
100 galls., and under 200 galls.	4
200 „ „ „ 300 „	$3\frac{1}{2}$
300 galls. and under 400 galls.	$3\frac{1}{4}$
400 „ „ „ 600 „	3
600 „ „ „ 800 „	$2\frac{1}{2}$
800 „ „ „ 1200 „	$2\frac{1}{4}$

Iron Girder Bridges.

Labour only, *Per cwt., including scaffolding.*

Wages of Fitter 1s 6d, and Holder-up 1s per hour.

	s.	d.
Fitting and riveting large lattice girders, previously put together, over land bays or spans	4	4
Ditto, ditto, over water, rivers, &c.	5	0
Riveting only, per 100 rivets, from 11s to ...	12	6
Ditto, with machine, from 3s 3d to	4	2
Rimering, if badly fitted, extra per rivet 4d to ...	0	6
Making, punching, riveting, constructing, fitting, and fixing large plate girders for bridges, &c.	15	0
Ditto, lattice or triangular girders, or large tanks	20	0
Ditto, small box or plate girders for floors, shop-windows, &c., or small tanks, caulked ...	22	6
Plate, angle, and other iron required, per cwt	0 18	0

The above items will give the net cost without *rimering*, which must be allowed for as per item 5 according to the care bestowed upon the manufacture and fitting, with incidental expenses, cartage, and profit upon the whole outlay per cwt.

Wrought iron is now extensively used in the construction of girders and breastsummers, to support walls over shop fronts, heavily loaded floors of mills, stores, &c., and is superseding wooden and cast iron girders. Cast iron is liable to crack from sudden shocks, or from the sudden application of cold water while in a heated state, and in case of fire is little better than wood.

The following table for wrought iron girders is for such spans as are most in use without the intervention of columns. To support walls and heavy machinery, the box girder will be found the best, but for loaded floors, the plate girder offers many advantages :—

Spans.	Height of 18 inch walls supported.	Constant load of walls, floors and roofing.	Sectional area of bottom of girder.	Sectional area of top of girder.	Depth of girder.	Thickness of vertical plates.	Angle irons.
10 ft.	10 ft.	13 ton.	5 in.	6 in.	9 in.	3-16 in.	3 in. $3\times3\times\frac{7}{16}$
do.	15 ,,	18 ,,	6 ,,	7 ,,	do.	do.	
do.	20 ,,	24 ,,	$8\frac{1}{2}$,,	10 ,,	do.	do.	
15 ft.	10 ,,	20 ,,	8 ,,	9 ,,	12 in.	$\frac{1}{4}$ in.	3 in. $3\times2\frac{1}{2}\times\frac{7}{16}$
do.	15 ,,	26 ,,	10 ,,	12 ,,	do.	do.	
do.	20 ,,	35 ,,	$13\frac{1}{2}$,,	15 ,,	do.	do.	
20 ft.	10 ,,	25 ,,	$9\frac{1}{2}$,,	11 ,,	16 in.	5-16 in.	3 in. $3\times3\frac{1}{2}\times2\frac{3}{4}\times\frac{7}{16}$
do.	15 ,,	35 ,,	$13\frac{1}{2}$,,	15 ,,	do.	do.	
do.	20 ,,	46 ,,	18 ,,	21 ,,	do.	do.	

These beams are calculated to break with about four times the loads, in tons, here mentioned,

Wrought iron plate girders, of the same strength as the box girders, given above, may be made by increasing the area of the top and bottom plates $\frac{1}{2}$ inch, the thickness of the vertical plates for the 10 feet girders $\frac{1}{8}$ inch, and the 15 and 20 feet girders, 3-16ths inch.

In plate iron girders, not only the sectional areas must be correct but also the perfect arrangement of the joints must be attended to.

ALL JOINTS should butt close together, covered with proper jointing strips, and no two joints should occur in the same place. In punching the plates and angle irons, the sectional areas should be diminished only to the extent necessary for rivets of the proper size ; and plates, &c., imperfectly punched, should be rejected.

THE RIVETS should be of Lowmoor or other superior iron, and where the strain depends on them, their *collective areas should equal the sectional areas of the plates connected.*

All girders should be so secured on walls as to admit of expansion and contraction.

ANNEALED DRAWN BLACK IRON

FENCING WIRE.

In Melbourne, Sydney and Brisbane.

Wire Gauge.	Weight of Fence per Mile for										Length of Cwt.
	1 Wire		2 Wires.		3 Wires.		4 Wires.		5 Wires.		
	Cwt	qr. lbs.	Cwt.	qr. lbs.	Cwt.	qr. lbs.	Cwt.	qr. lbs.	Cwt.	qr. lbs.	Yards.
4	6	3 17	13	3 6	22	2 23	27	2 12	34	2 1	255
5	5	3 6	11	2 12	17	1 18	23	0 24	29	0 2	303
6	4	3 14	9	3 0	14	2 14	19	2 0	24	1 19	361
7	4	0 13	8	0 26	12	1 11	16	1 24	20	2 9	428
8	3	1 23	6	3 18	10	1 13	13	3 8	17	1 3	509
9	2	3 15	5	3 2	8	2 17	11	2 4	14	1 19	609
10	2	1 12	4	2 24	7	0 8	9	1 20	11	3 4	748
12	1	1 18	2	3 8	4	0 26	5	2 16	7	0 6	1244

The present price of the best black iron wire in Melbourne and Sydney is from £17 to £20 per ton.

NEW PATENT OVAL "SAMSON" WIRE.

Wire Gauge	Weight of Fence per Mile.									
	1 Wire.		2 Wires.		3 Wires.		4 Wires.		5 Wires.	
	Cwt	qr. lbs.	Cwt.	qr. lbs.	Cwt.	qr. lbs.	Ct.	qr. lbs.	Ct.	qr. lbs.
7 equal 5 common wire	3	3 0	7	2 0	11	1 0	15	0 0	18	3 0
8 „ 6 „ „	3	0 0	6	0 0	9	0 0	12	0 0	15	0 0
9 „ 7 „ „	2	1 19	4	3 10	7	1 1	9	2 20	12	0 11
10 „ 8 „ „	2	0 0	4	0 0	6	0 0	8	0 0	10	0 0

Although the Patent Oval Samson Wire is worth about £6 more per ton than the common iron wire, there is said to be a considerable saving in using it on account of its superior strength weight for weight.

Post boring and morticing machines with chisels and bits, £20.

Post boring apparatus, 38s. to 50s.

Fencing braces all iron, 6s. each.

Wire straighteners, 8s. to 25s. each.

Earth borers for fencing posts, 3 sizes, viz.:—

Size of holes,	7 inch,	9 inch,	12 inch.
Price	21s.	25s.	40s.

Melbourne and Sydney prices.

Cut Tacks.

Per lb.	*s.*	*d.*
⅜ and ½ inch	0	4
⅝ inch 6d., ¾ inch ...	0	7
8 oz. Flemish wrought	1	0
14 oz., Ditto	1	6
Cut lath nails per lb.	0	4

Brass Headed Nails.

Per Dozen.	*s.*	*d.*
From 1 to 4 inches, from ... 2d. to	0	9
Do. per gross, 1s 6d to	7	0

Countersunk Clout.

Per lb.	*s*	*d.*
From 1 to 3 inches, and from ... 10d to	0	5
Clout nails	1	0

American Cut Nails.

1 inch per cwt. ...	35	0
2 inch	30	0
3 inch	25	0

American Finishing Nails.

In 1lb. Packets.	*s.*	*d.*
1 inch to 3 inch from 1s to	0	8

Slate Nails.

Per lb.		
Zinc 1, 1¼, and 1½ inch	0	6
Composition	1	3
Copper	1	9

Wire Nails

¾ inch to 6 inches
20s. to 35s. per cwt.

Spikes.

6 inch 5 oz., each, 7 inch 6 oz., 8 inch 7 oz., 9 inch 6 to 8 oz., } 28s. per cwt.

Ewbank's Patent Nails.

Weight per M—lbs.		Price per cwt. *s.*	*d.*	per lb. *s.*	*d.*
1 inch	2½	...85	0	0	10
1¼ inch 1½ inch	3½ 4	65	0	0	7½
1½ inch	7	...42	0	0	5
1¾ inch	8	...40	0	0	5
2 inch	10	...37	0	0	4½
2 inch	7	...50	0	0	7
2¼ inch	12	...35	0	0	4
2½ inch	17	...33	0	0	4
3 inch	25	...33	0		
3½ inch	32	...31	0	0	4
4 in. 4½ in. 5 in. 6 in.		29	0	0	3½

Screws.

Per dozen.	Iron. *s.*	*d.*	Brass. *s.*	*d.*
½ and ¾ inch	0	1½	0	3
1 inch ...	0	1½	0	6
1¼ inch ...	0	2	0	7
1½ inch ...	0	2½	0	8
1¾ inch ...	0	3	0	9
2 inch ...	0	3½	1	0
2½ inch ...	0	4	1	4
3 inch ...	0	5	2	0
3½ inch ...	0	8		
4 inch ...	1	0		

Sash Pullies.

Per dozen.	Iron. *s.*	*d.*	Brass. *s.*	*d.*	Brass Axles. *s.*	*d.*
1⅓ in....	3	0	6	0	0	10
1¾ in....	3	6	7	0	1	0
2 in. ...	4	0	8	0	1	4

Iron Bolts.

Per inch, including screws.

	s.	d.
Japaned barrel ...	0	1½
Bright tower or barrel	0	1
Light spring	0	1

Brass Flush Bolts.

Each.

	½ Inch. s.	½ Inch. d.	¾ Inch. s.	¾ Inch. d.	Inch. s.	Inch. d.
2½ inch	0	3	0	4	0	7
3 ...	0	4	0	5	0	9
4 ...	0	5	0	6	0	10
5 ...	0	6	0	8	1	1
6 ...	0	7	0	9	1	3
7 ...			0	11	1	6
8 ...			1	0	1	8
9 ...			1	2	1	11
10 ...					2	1
12 ...					2	6
18 ...					3	9
24 ...					5	0

Circular Door Springs.

	Brass.		Iron.	
Small size ...	7	0	3	6
Do., middle size	8	6	4	0
Do., large size	10	0	4	6
4-in. brass door spring hinge	10	0		

Swing Centres for Doors.

Double action to open both ways.

Smith's Patent, each 30s.

Whitehouse's patent 15s to 30s

Patent climax 12s to 25s

Brass Pew Hinges.

Each.

	s.	d.
To project 1 inch ...	3	0
1½ ...	4	3
2 ...	4	6

HINGES.

Per pair, including screws.

Butts and Back-flaps.

	Cast Iron. s.	Cast Iron. d.	Wrought Iron. s.	Wrought Iron. d.	Cast Brass. s.	Cast Brass. d.
1 inch	0	2	0	3	0	4
1¼ ...	0	3	0	4	0	5
1½ ...	0	4	0	5	0	6
2 ...	0	5	0	8	0	8
2½ ...	0	6	0	10	0	10
3 ...	0	8	1	0	1	3
3½ ...	0	9	1	3	2	6
4 ...	0	10	1	6	3	6
4½ ...	1	6	2	0	4	6
5 ...	1	6	2	6	6	0

Gate Hinges.

With bolts and nuts complete.

ft.	in.	*Per pair.*	s.	d.
1	6	strong	4	6
2	0	do.	6	0
2	3	do.	7	0
2	6	do.	7	6

Hooks and Hinges.

Per pair.

	s.	d.
12 inch	1	0
14	1	6
16	2	0
18	2	6
20	3	0
22	4	0
24	5	0

Rising Skew Butts.

Per pair.

	Iron. s.	Iron. d.	Brass. s.	Brass. d.
3-inch ...	1	0	10	0
3½	1	3	12	10
4	1	6	14	0
4½	2	0	16	0

Best Locks.

	each. From		To	
	s.	d.	s.	d.
8-in. fine ward common stock ...			1	6
9 inch ditto ...			1	9
10 inch ditto ...			2	0
12 inch ditto ...			3	0
8 in. fancy bushed stock ...			3	6
10 inch ditto ...			4	6
4 inch dead lock	1	3	2	0
5 inch ditto	1	6	2	3
6 inch ditto	1	4	3	0
8 inch ditto	2	7	4	6
10 inch ditto	5	8	7	3
3 inch cupboard lock ...	0	9	1	6
3½ inch ditto	1	0	1	6
4 inch ditto fine	1	4	1	10
Fancy ditto	1	6	2	0
3½ tumbler brass	2	0		
Cut ditto	2	6		
5 inch iron rim, 2 bolt knob locks, best	2	6	3	6
6 inch ditto	3	0	4	0
7 inch ditto	4	0	5	0
8 inch ditto	5	0	6	0
7 inch iron rim round ward, stop & 3-bolt brass knob lock ...	5	0	6	0
8 inch ditto	6	6	7	6
9 inch ditto	8	0	9	6
6 inch mortice or brass case	6	6		
7 inch ditto	7	6		

Chubb's Patent Detector Locks.

Each. 6 tumblers.	Inches.	s.	d.
Till or drawer, to	3	12	6
Cut and straight cupboard, to	4	12	0
Chest, desk, & Linkplate cupboard lock	3	14	0
	3½	15	0
	4	16	0
	4½	17	0
Iron rim, dead one side	6	26	0
	7	28	0
	8	33	0
	9	39	0
	10	50	0
	12	64	0
Mortice, dead lock	3	27	0
	4	29	0
	5	30	0
	6	33	0
	7	10	0
Mortice, 3 bolt	6	52	0
	7	56	0
Flush spring latch	2½ to 3½	26	0
	4½	31	0
Mortice, do. do.	4	31	0
Spring locks for front doors and 3-bolt rim locks	4	43	0
	5	45	0
	6	50	0
	7	52	0
	8	56	0
	9	62	0
	10	70	0
Patent Combination latches	4	16	0
	5	17	0
	6	18	0

CROSS GARNETS OR T HINGES.

	Per pair.	s.	d.
10-inch, strong	...	0	6
12 7d.	... 14in.	0	8
16 ...	... ...	0	10
18 ...	... ...	1	1
20 ..	.. ...	1	3
Larger sizes, per lb.		0	6

To be measured from the joint.

PARLIAMENT HINGES.

Cast iron, per pair.

3½-in.	4-in.	4½-in.	5-in.
7d.	8d.	10d.	1s.

BRASS PROJECTING BUTTS.

Height.	Per pair. width.			s.	d.
3 by	2½	...	...	2	10
3½ „	3	...	...	4	8
4 „	3½	...	...	5	10
4½ „	2¾	...	...	7	2
5 „	4	...	...	9	4
3 „	4	...	...	5	6
3½ „	4½	...	...	6	6
4 „	5	...	...	8	6
4½ „	5½	...	...	11	0
5 „	6	...	..	15	0

DOOR FURNITURE *(Whitehouse's, &c.,) with mountings.*

	*Mortice furniture. s.	d.	Large knobs. s.	d.	Bell levers. s.	d.	Pull outs. s.	d.
China, white or black ...	2	0	1	6	5	0	6	0
„ ivory tint	2	6	1	8	5	0	6	0
„ gold scroll	5	0	2	6	7	6	9	4
„ gilt and flowers ...	8	6	4	0	9	0	11	0
„ plain gold lined ...	3	6	2	0	6	0	8	0
Ebony	3	0	1	9	4	6	6	0
Brass	1	3	3	0	3	6	4	3
Patent horn	6	6	3	0	7	0	9	0
Fancy crystal glass ...	9	0	4	0	11	0	13	0
Ditto amber cut	20	0			15	0	18	0

*MORTICE FURNITURE includes 2 knobs, bolt knob, and two escutcheons.

LONG FINGER PLATES same price as mortice furniture.

DOOR SPRINGS, iron japanned, brass mounted, per inch, 2d.

Do., Cartland's patent double action, from 15s. to 30s. each.

DOOR FURNITURE.

India rubber door springs					1s. 6d. to 2s.
Stanhope door springs, japanned		8 inch	...		...4s. 6d.
Ditto	do.	5 inch	...		...2s. 6d.
Paragon light spring brass					5s. to 6s.
Japanned tail door springs each	12in. 1s 6d	14in. 1s 9d	16in. 2s 0d	18in. 2s 3d	20in. 2s 6d 22in. 2s 9d
Patent helical door springs ...	4s 0d	4s 6d	5s 0d	5s 6d	6s 0d

	s.	d.
Bow latch, 4 in., with brass knobs	1	6
Imitation Bramahs, 4 in., best night latches, with Iron rim	5	6
Ditto, with brass rim	7	6
Brass case pulpit latch ... ... 3s 6d to	6	0
Thumb, or Norfolk latches ... ... 6d to	1	0
Latches for self shutting gates per dozen	15	0
Night latches with 2 keys „ ...21s to	60	0
Handles, 5 inch, brass, each... ... ... 1s to	2	0
„ 6 in., do. do. ... ... 1s 6d to	3	0
„ 7 in., do. do. ... ... 2s 6d to	4	6
„ 8 in., bronze or fancy ...	6	0
„ china amber and crystal p. pair 4s 0d to	20	0
Brass door hooks, per inch	0	4½

Carpenters' Patent Rim Locks.

5 in.	6 in.	7 in.	8 in.	9 in.	10 in.
3s. 6d.	4s.	5s.	7s.	10s.	15s.
	3s.	4s. patent double handed locks.			

Imitation Ditto.

5 in.	6 in.	7 in.	8 in.	9 in.	10 in.
2s.	2s. 3d.	2s. 9d.	4s.	6s.	7s. 6d.

Fine Ward Draw-back Locks.

	7 in.	8 in.	9 in.	10 in.	12 in.
Common	4s.	5s.	6s.	8s.	11s.
Better...	5s.	6s. 6d.	8s.	9s. 6d.	15s.

Mortice Iron Locks, *with brass furniture, each.*

	s.	d.	s.	d.
5 and 6 inch, from	3	6 to	6	6
7 inch, from	4	6 to	7	6

If rebated, add 25 per cent.

Mortice Sash Locks, *with crank furniture, each.*

1¼ in.	1½ in.	1¾ in.	2 in.
4s.	4s. 6d.	5s.	6s.

If rebated one-half more.

Mortice Sash Latches, with furniture complete, from	s.	d.
	3s. to 4	0

Sash Furniture.

	s.	d.
Sash fastening and screws	6d. to 1	6
Spring roller ditto	1s. to 2	0
Cranked ditto, for casements	... 3	0
Sash centres or pivots	6d. to 1	0
Best or patent sash line, per yard	... 0	1½
Copper sash line, per lin. foot	3d. to 1	0
Sash weights, iron, per lb	... 0	1½

Shelf Brackets, *ornamental cast Iron per dozen including screws.*

	s.	d.		s.	d.
4 x 5 ..	7	6	10 x 8	14	9
7 x 6 ..	10	6	10 x 12	23	9
8 x 6 ..	12	6	14 x 12	26	9

Arnott's Ventilators, *leathered.*	s.	d.
White front and bronzed	7	6
Ditto and fancy bronzed	12	0
Large size common black	12s. to 18	0

Iron Air Bricks.

	4½ x 3	9 x 3	12 x 6	9 x 6
Common... ...	6d.	9d.	1s. 6d.	1s.
Galvanized ...	9d.	1s.	2s.	1s. 6d.

Gratings, cast iron, dished or plain, from 4 to 15 ins. square ... ... 1s. to 5s. 0d.

Iron Stench Traps, from 3 ins. to 12 ins., square, from ... ... 1s. 6d. to 8s.

Coach Bolts, *complete, per dozen.*

	s.	d.
1 in. long x ¼ in. diameter	0	8
1½ in. long x ¼ in. diameter...	1	0
2 ins. to 8 ins. long (¼ in. dia.), from 1s. 3d. to	2	0
5-16 in. bolts, complete, from 1½ to 8 ins. long, from ... ... 1s. to	3	0
⅜ in. bolts, complete, from 1½ in. to 10 ins. long, per lb.	0	6
7-16 in. to ¾ in., from 2 to 10 ins. long, do., from 4d to	0	6
Furnace doors and grates for 9 to 18 ins. openings, the set, from... ... ... 6s. to	20	0
Manilla rope per cwt.	54	0
Blasting powder by the keg per lb. 9d. to	0	10
Fuse per coil ... ... 9d. to	1	0

Rope, Weight and Strength.

RULE.—For weight in pounds per fathom of three-strand hemp rope, square the circumference, and multiply result by ·26.

Breaking strain in cwts., square the circumference, and multiply result by 5·6. Thus, a 3-inch rope would weigh 2·34 lbs. per fathom, and the breaking strain be 50·4 cwts.

Example $3^2 = 3 \times 3 = 9$

$9 \times \cdot 26 = 2 \cdot 34$, the weight in lbs. per fathom.

then $9 \times 5 \cdot 6 = 50 \cdot 4$, breaking strain in cwts.

Best Quality Manilla Ropes.

Weight per fathom...	14oz.	1¼lb.	2¼lbs.	2¾lbs.	3¾lbs.	4½lbs.	5½lbs.	6½lbs.	7½lbs.
Circumference	2	2½	3	3½	4	4½	5	5½	6 in.

Best Galvanised Wire Ropes.

Weight per fathom ..	11lb.	11lb. 8oz.	31lbs. 8oz.	51lbs. 8oz.	71lbs.	131lbs.
Circumference	1	1½	2	2½	3	3½

WEIGHT AND STRENGTH OF SHORT LINK CHAINS.

Diameter in inches of Iron Links.	5-16	3-8	7-16	½	9-16	⅝	11-16
Weight in lbs., per fathom	5½	8	11	14	18	23	28
Proof Strain in cwts.	25½	36¾	51¼	65½	85	102	127
Diameter in inches of Iron Links.	¾	13-16	⅞	15-16	1	1⅛	1¼
Weight in lbs., per fathom.	32	38	44	50	56	71	87
Proof Strain in cwts.	147	177	200	236	268	334	408

To find the weight which ordinary short-link chains will bear with safety :—

Multiply the square of the diameter (reckoned in 16ths of an inch) by ·035 ; the product will be the weight in tons. Thus, in the case of a ¾-inch chain : ¾ = 12-16ths, and $12 \times 12 = 144$; then $144 \times \cdot 035 = 5 \cdot 04$, say 5 tons—the safe working strain. If the squares are divided by 28, a similar result is obtained. Thus 144 divided by $28 = 5 \cdot 14$. In general practice, however, 30 may be used as a divisor. The same squares, multiplied by ·052, will give the approximate proof strains in tons.

By N. S. Wales Railways, &c.

as per conditions on Classification, unless otherwise specified.

	Special Class.								1st Class.		2nd Class.		3rd Class.		4th Class.	
	A.		B.		C.		D.									
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
(1) For any distance not exceeding 7 miles, at p. ton	1	6	2	6	2	6	3	6	4	6	5	6	8	0	10	0
For any distance not exceeding 15 miles, at p. ton	2	0	3	0	4	0	5	0	6	0	7	0	9	0	12	0
For any distance exceeding 15 miles at per ton per mile, in addition to the charge for 15 miles ..	0	1¼	0	1½	0	2¼	0	2½	0	4	0	5	0	7	0	9

Subject to the following allowances :—

10 per cent. on the rate per mile for every mile beyond 100.
20 do. do. do. 150.
40 do. do. do. 200.

Minimum Charge.—15 miles and under, 1s.; 25 miles and under, 1s. 6d; 35 miles and under, 2s.; 55 miles and under, 2s. 6d.; 77 miles and under, 2s. 9d.; 86 miles and under, 3s.; 115 miles and under, 3s. 9d.; 135 miles and under, 4s.; 175 miles and under, 4s. 6d.; 200 miles and under, 4s. 9d.; 225 miles, 5s.; 250 miles, 5s. 3d.; 300 miles, 5s. 6d.

Note.– Goods will not be carried for delivery at Platforms, except by special agreement that Consignor will take all risk of loss, or damage to, goods left at platform.
(1) This item refers to the Northern Railway only.

Contractor's Plant, *at owner's risk only.*

Waggons, Tools, and Implements, at 3d. per ton per mile.—Minimum charge. 10s.

Waggons on wheels, 4d. per mile each. Minimum charge, 10s.

Locomotive Engines in Steam, Owner's risk only, 2s. 6d. per mile each, in addition to wages of Driver, Fireman, and Guard, and cost of fuel.

Ditto on wheels, but not in steam, first-class rates, at owner's risk only.

Special Class.

All carried at owner's risk; and to be loaded and unloaded by owner, if performed by department 1s. per ton will be charged for either service. For distance over 100 miles, the terminal charge for 15 miles will be remitted.

A. Bricks,* Clay.*
Palings, posts, and rails, timber (sawn or hewn), hardwood in logs 30 c. ft. p. ton; softwood 40 c. ft. p. ton. (If over 40 miles min. 6s. 2d.)

B. Iron pig and scrap (up journey) * Lime, * Marble (undressed), *Sand, shingles, and laths.

C. Drain pipes, tiles, glue pieces, iron bar and plate (up journey), and slates.

D. Sleepers (railway), stone dressed, terra cotta and fire clay blocks, whiting.

Timber (dressed) and Boards not more than 2 inches thick; if requiring 2 trucks, first-class rates.

For timber requiring two or more waggons, no less charge than for 3 tons will be made.

Marked thus* will be carried only in quantities of 4 tons and over; smaller quantities will be charged as 4 tons, or subject to First-class rates.

All other articles will be carried in quantities of not less than 1 ton; under 1 ton to be charged as 1 ton, or subject to First-class rates.

FIRST CLASS.

All carried at Owner's risk, if Commissioner's risk, second class rates. Quantities of less than 20 cwt. charged as one ton, or at second class rates.

Cement, Iron, pig and scrap. Tar and pitch.

SECOND CLASS.

All carried at Owner's risk; if Commissioners risk third class rates.

Boilers (if requiring 2 trucks, 3rd class rates).

Iron, bar, rod, angle and T. Boiler-plate or sheet, Castings (if over 3 tons, Owner's risk only). Girders, (if requiring 2 trucks no less charge than for 3 tons will be made). Tanks, 80 cu. ft. per ton. Wire in bundles. Wheels and axles (railway).

Lead, pig and sheet. Stone (carved), zinc, and tin plates.

THIRD CLASS.

All carried at Owner's risk; if Commissioners' Risk an Insurance rate of 10s. per cent. on the declared value of the articles will be made. Minimum charge for risk, 1s. 6d.

Carpentry, Joinery, Ironmongery, Machinery of all kinds.

FOURTH CLASS.

All carried at Owner's risk; if Commissioners' risk, Double Rates,

Plate Glass in cases. Slate slabs for Billiard Tables.

Miscellaneous.

Road metal, limestone, stone (undressed.)

Owner's risk, to be loaded and unloaded by owners. Carried only in lots not less than 4 tons. If unloaded by Department a charge of 6d. per ton will be made.

Lots under 4 tons to be charged as 4 tons, or subject to first-class rates.

Rate.—For the first 15 miles, 1s. 6d. per ton, and for every mile exceeding 15 miles and up to 35 miles, 1¼d. per ton per mile, and for every mile exceeding 35 miles, 1d. per ton per mile, exclusive of charge for demurrage of trucks or storage in yard. *Minimum charge* 5s.

Gunpowder, Dynamite, and other Explosives (Owner's risk), in casks or cases, which must be packed in secure bags, 1s. per ton per mile for whole distance. To be loaded and unloaded by owners. *Minimum charge*, 5s.

N.B.—The above abstract is made from the Goods Rates sheet of the Great S. and W. and Richmond Railways. The Northern Railway Goods Rates from Newcastle are similar to the above, with the exception of the first item on page 126.

Cartage, Horse Power, &c.

Cartage on bad roads per ton per mile from 2s. to 4s.
Ditto on good roads ditto ditto 1s. to 2s.
Haulage on Railways about one tenth cost on good roads.
Freight by coasting steamers about one fourth cost on Railways.

Horse Power.—Theoretically a horse is calculated to raise 33,000 lbs one foot high per minute or 150 lbs raised 220 feet high per minute, and this is the data or nominal horse power upon which the power of Engines are calculated but in practice only about two thirds of this power can be depended on for about 8 hours per day, *e.g.* A horse would raise 80 bricks weighing 560 lbs 40 feet high per minute or 40 bricks 80 feet high in the same time.

A horse can draw 10 tons on a level well laid Railway or about 6 tons on ordinary Railways, or 4 tons on a horse Railway with 6 x 3 hardwood rails.

Man power.—The power of a man is generally reckoned at one fifth that of a horse. His lifting power is about 280 lbs or 2¾ cwt.

NEW SOUTH WALES.

	s.	d.
Cement per barrel and dressed timber 100 ft. sup.	2	0
Cordage, iron galvanized, nails, paints, and rope per ton	40	0
Doors, sashes, and shutters each...	1	0
Iron galvanized manufactures per cwt.... ...	3	0
Iron wire per ton	20	0
Blasting powder per lb.	0	1
Timber rough and undressed	1	0
Turpentine per gallon 1s. Varnish per gallon ...	2	0

VICTORIA.

Fire bricks per 1000	20	0
Cement per cwt., oil in bulk per gallon	0	6
Cordage, hempen, and other *except coir* per cwt...	4	6
Doors, each	2	6
Dynamite and Lithofracteur per lb.	0	4
Fuse per coil of 24 feet or less	0	1½
Gun cotton or other material used for blasting ...	0	5
Iron galvanized per ton	30	0
Iron wire 1 to 9 gauge per ton	20	0
Lead sheet and piping per cwt.	2	6
Nails and screws per cwt...	3	0
Paints wet or dry per ton	40	0
Pipes, cast iron, flanged, spigot and faucit per ton	40	0
Powder blasting per lb.	0	1
Slates up to 18 x 10 per 1000	15	0
Ditto all of larger size per 1000	25	0
Timber dressed or planed per 100 sup. feet ...	1	6
Ditto undressed ditto	0	9
Ditto laths 1s. per 1000 ... Shingles per 1000	0	6
Ditto palings per 100	0	6
Ditto finished not otherwise enumerated *ad. val.*	20 p. ct.	

QUEENSLAND.

	s.	d.
Iron castings, galvanized iron, iron wire, nails, and screws; paints wet and dry per cwt. ...	2	0
Iron tanks each	8	0
Gunpowder per lb	0	1
Glue ditto	0	2
Oils not in bottles and turpentine per gal. ...	0	6

Cordage and ropes per cwt.	4	0
Cement per barrel	2	0
Doors each and sashes per pair	2	6

SOUTH AUSTRALIA.

Glue per lb.	0	1
Cement and Plaster of Paris per barrel	2	0
Doors and frames each and sashes per pair ...	2	6
Iron galvanized, including gal. iron wire per ton	30	0
Iron pipes, gates, fencing and posts	30	0
Iron wire & iron girders per ton...	20	0
Lead (pipe and sheet) per cwt.	2	6
Nails, screws, and paints per cwt.	2	0
Cordage and rope per cwt.	3	0
Turpentine and varnish per gal.	0	6
Timber, battens, deals, planks, quarterings, and spars per 40 cu. feet.	2	6
„ Boards $\frac{3}{8}$ to $1\frac{1}{2}$ inch rough or wrought per 100 feet	1	6
„ Architraves, skirtings, mouldings per 100 lin. feet	1	6
„ Laths per 1000 1s ; Shingles per 1000 ...	0	6
„ Palings, per 100	0	6
Marble, stone, slate (wrought), tiles and bricks, except fire bricks *ad valorem* duty	10 p. cent.	
Iron and brass castings, pumps, and wrought iron *ad valorem* duty	5 p. cent.	

TABLES SHOWING WEIGHT OF 1 FOOT IN LENGTH OF CAST IRON COLUMNS, AND PIPES, IN LBS., AND DECIMALS.

Bore	Parts of an inch in thickness of Metal.						
inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$
2	8·74	12·27	16·11	20·25			
$2\frac{1}{2}$	10·58	14·72	19·17	23·92			
3	12·42	17·18	22·24	27·61	33·28	39·27	
$3\frac{1}{2}$	14·26	19·64	25·31	31·29	37·58	44·16	51·1
4	16·10	22·10	28·38	34·97	41·87	49·08	56·6
$4\frac{1}{2}$	17·94	24·54	31·44	38·65	46·17	53·97	62·1
5	19·78	27·00	34·51	42·34	50·46	58·90	67·6
$5\frac{1}{2}$	21·63	29·45	37·58	46·02	54·76	63·81	73·2

STONE &c,

Australian.	Per cubic foot. lbs.	No. of cubic feet per ton.
Oamaru, Typo, Waurn Ponds and Geelong freestones ...	134	16½
Kyneton sandstone	138	16¼
Western Port, do	148	15¼
Spring Bay ditto ...	140	16
Point Ventenet, do	145	15½
Grampian sandstone		14
Sydney sandstone ...	140	16
Bluestone (basalt)..	161	14
Granite, grey or red	167	13½
Marble, Adelaide ...	169	13⅓
Rubble, ballast and metal see page 20		
Brickwork see page 40		
Sand (sharp) about	95	23
Clay, mild brick earth	120	17
„ strong and stiff	135	16½
English, &c.		
Bath (Oolite) ...	140	16
Portland, do	153	14⅔
Craigleith, sandstone	149	15
Caen, French freestone	132	16½
Granite, Aberdeen ...	16	13⅔
Marble, Carrara ...	170	13¼
Cast Iron	464	
Wrought Iron ...	477	

FLAGGING.

In		Ft. sup p. ton.
2	Yorkshire	86
2½	Do	70
3	Do	57
2	Arbroath	87
2½	Caithness	68
1	Slate, Welch	160
1½	Do.	107
1	Marble slabs, black ...	165
1	do., white or veined	160

AUSTRALIAN FLAGGING.

In.		Ft. sup. p. ton.
4	Sydney sandstone ...	48
3	Sawn bluestone ...	84
2½	Ditto	70
2	Ditto	56

TIMBER.

British, &c.	Per cubic foot. lbs.	No. of cubic feet. per ton.
Red or white American pine (seasoned)	34	66
Yellow pine, Baltic, (seasoned) ...	35	64
Red pine, Riga do ...	36	62
Pitch pine (seasoned)	39	57½
Cedar, Spanish American (seasoned) ...	30	75
Mahogany Spanish	66	34
Mahogany, Honduras, or Baywood ...	40	56
Oak, just felled ...	68	33
Oak, of commerce ...	57½	39
Oak, well seasoned	48	47
Elm, just felled ...	53	38
Elm, well seasoned	42	53
Teak, Indian, do.	42	53
Australian.		
Cedar N. S. Wales market cut ...	36	62
Kaurie Pine, New Zealand market cut	36	62
Hardwood, market cut, about ...	56	40
Iron bark and box, just felled ...	70	32
Blue or red gum, do.	65	34½
Stringy bark and blackwood, do. ...	64	35

WATER, *rain or pure. at* 63°.

62½ lbs., or 6¼ gallons, one cubic foot

10 lbs., or 277¼ c. ins., one gallon

35·85 c. ft., or 224 gallons, one ton.

8 gallons or 1 ft. 3½-12ths cube, one bushel.

ROOFING, *per square.*	Cwt.
Slates, 2½ in. lap. see p. 31	5¾
Palings, half 5 or 6 ft., 3	to 4
Shingles, see page 66 ... 2½	to 3
Zinc, plain, 8 to 13 gauge, ⅝	to 1¼
Gal. corrugated, 28 to 24 gauges lapped 2 cors. 1	to 1½
Lead—add 00 to the lbs. per foot for the lbs. per square (multiply by 100) and allow for laps.	

The rolls are generally about 30 feet by 7 feet.

FLOORS, *per square.*	Cwt.
1 in. wrought Amer. red or white pine	2
1⅛ in. wrought Baltic red pine	2⅛
1 in. ditto pitch pine ...	2⅛
1 in. Colonial pine, T. & G.	2½
Ditto, hardwood, dressed ..	4

FLOORS should be made strong enough to bear the following weights per foot sup. The scantlings of the skeleton framing may be calculated from pages 58 to 61, in hard or soft wood.

	Cwt.
Private or ordinary rooms, etc. from 1 to	2
Public rooms for meetings, halls, theatres, etc. ...	2½
Warehouses or stores, railway or wharf platforms or landings, road bridges, or railway *over* bridges ...	3
Railway bridges or viaducts	4

SUNDRIES.

Laths, split hardwood or sawn pine, 4 ft. p. M. 2 to	2½
POSTS and RAILS, viz., 25 posts and 75 rails, market cut ... ... 30 to	35
PALINGS, 5 feet, per C. 3 to	4½
„ 6 do., do. from 4 to	6
SHINGLES, hardwood, p. M.	3

CAST IRON SPOUTING.	lbs.
4 in. ½ round p. length of 6 ft.	16
4½ in. do. do.	17
5 in. do. do.	18

	2 in. lbs.	2½ in. lbs.	3 in. lbs.	4 in. lbs.
Cast iron down pipes, (6 ft.)	16	20¼	23	38¼
Swan necks ea	3¾	4	7½	11
Heads, each...	7	7½	8	11
Shoes, each ...	1¾	2¾	4	7

METALS, *per cubic inch.*	lbs.
Iron bar	0·279
Iron or tin, cast ...	0·263
Steel, hard	0·2827
Lead	0·4105
Copper, cast	0·3178
Brass, cast	0·3036
Zinc, cast	0·26
Gun metal	0·31

See note page 108.

Metals, lbs. per cubic foot see page 134.
Washing coppers each, page 107
Vulcanised India rubber, p. 106.
Rod and bar iron, page 113.
Metals, per sup. ft., page 108.
Ropes and chains, page 125.
Cast iron pipes, page 114.

LIME, CEMENT, &c.	lbs.
Lime, Heads p. bag 3 bus.	180
Do. Geelong roche, do. ...	200
Cement, Portland, p. cask of 4 (pressed) bushels	430
Cement, Roman, per cask	390
Cement (Keene's marble) p. cask of 4 bushels ...	300
Plaster of Paris, p. ck. 3½ bushels	310

BRICKS, *per cubic foot.*	lbs.
London stocks	115
Welch or other fire bricks	150
Melbourne, white or red	131
Ditto white pressed ..	136

PAVING TILES, ETC., *each.*	lbs.
Australian 9 in., 7lbs.; 12in.	14

Earthenware drain pipes, *see p.* 21

To find the Weight of Round Bar Iron.

Square the diameter in inches; this multiplied by the length in feet, and again by 2·6, will give the weight of the bar in pounds, for wrought iron.

The Rule for Cast Iron is

Diameter squared x length in feet x 2·48 = weight in pounds.

Example.—What is the weight of a wrought-iron bar whose diameter is 2 inches, and length 8 feet?

Solution. $2^2 = 4 \times 8 \times 2{\cdot}6 = 83{\cdot}2$lbs.

To Measure Pipes, Tanks, &c.

The following is a rough and ready way to find the contents of circular tanks, wells, and pipes. Square the diameter in inches, and cut off the right-hand figure as a decimal, and the result will be gallons in each 3 feet (1 yard) of depth or length if a pipe :—

Diameter. Inches.		Pipes. Inches.		Square.		Gallon in 3 ft.
2		2 x 2	=	4	or	0·4
6		6 x 6	=	36	or	3·6
12		12 x 12	=	144	or	14·4
		WELL OR TANK.				
36 ...	36	x 36	=	1,296	or	129·6
100 ...	100	x 100	=	10,000	or	1,000·0

To find amount of Interest by Practice.

In calculating interest the following table will be found valuable :—

$1\frac{1}{4}$	per cent.	is	1-80th	of the amount.
2	,,	,,	1-50th	,,
$2\frac{1}{2}$	,,	,,	1-40th	,,
4	,,	,,	1-25th	,,
5	,,	,,	1-20th	,,
10	,,	,,	1-10th	,,
15	,,	,,	3-20ths	,,
20	,,	,,	1-5th	,,
25	,,	,,	1-4th	,,
$33\frac{1}{3}$	,,	,,	1-3rd	,,
50	,,	,,	1-2	,,

To find the Value of Decimals.

To find the value of the decimal parts of 1 ton :—Multiply the decimal parts by 20, to reduce them to cwts. ; and point off in the product as many decimal places as are found in the decimals required to be worked out. The result will be the answer in cwts. Then multiply that product by 4, to reduce it to qrs. ; and proceeding as before to multiply by 28 will reduce it to lbs., or again by 16, to bring it to ounces.

OUNCES = DECIMALS OF A POUND.

oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.
1 ...	·06	5 ...	·31	9 ...	·56	13 ...	·81
1½ ...	·09	5½ ...	·34	9½ ...	·59	13½ ...	·84
2 ...	·12	6 ...	·37	10 ...	·62	14 ...	·87
2½ ...	·15	6½ ...	·40	10½ ...	·65	14½ ...	·90
3 ...	·19	7 ...	·43	11 ...	·69	15 ...	·94
3½ ...	·22	7½ ...	·46	11½ ...	·72	15½ ...	·97
4 ...	·25	8 ...	·50	12 ...	·75	16 ...	·100
4½ ...	·28	8½ ...	·53	12½ ...	·78		

Breaking Strains of Metals.

In lbs. per square inch.

Metals.	Specific Gravity	Weight of a Cubic Foot in lbs.	Tension or Tearing Weight.	Compression or Crushing Weight.
Brass—cast	8·4	524	18,000	10,300
„ wire	8·5	530	49,000	
Copper—cast	8·7	543	19,000	11,700
„ wire	9·0	562	60,000	
Iron—cast	7·1	440	20,000	80,000
„ wrought	7·7	480	55,000	35,000
„ plates	..	..	50,000	
„ „ double riveted seams		..	35,000	
„ „ single ..		..	28,000	
„ wire and wire rope		..	85,000	
Lead—cast	11·4	712	1,824	7,000
Steel—tempered	7·85	490	100,000	
„ hardened	7·78	485	74,000	
Tin	7·30	456	4,750	15,000
Zinc	7·00	437	7,500	

lb. or 1	Stone or 14 lbs.		Qr. or 28 lbs.			Cwt. or 112 lbs.			Per ton or 2240 lbs.		
	s.	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
$\frac{1}{4}$	0	$3\frac{1}{2}$	0	0	7	0	2	4	2	6	8
$\frac{1}{2}$	0	7	0	1	2	0	4	8	4	13	4
$\frac{3}{4}$	0	$10\frac{1}{2}$	0	1	9	0	7	0	7	0	0
1	1	2	0	2	4	0	9	4	9	6	8
$1\frac{1}{4}$	1	$5\frac{1}{2}$	0	2	11	0	11	8	11	13	4
$1\frac{1}{2}$	1	9	0	3	6	0	14	0	14	0	0
$1\frac{3}{4}$	2	$0\frac{1}{2}$	0	4	1	0	16	4	16	6	8
2	2	4	0	4	8	0	18	8	18	13	4
$2\frac{1}{4}$	2	$7\frac{1}{2}$	0	5	3	1	1	0	21	0	0
$2\frac{1}{2}$	2	11	0	5	10	1	3	4	23	6	8
$2\frac{3}{4}$	3	$2\frac{1}{2}$	0	6	5	1	5	8	25	13	4
3	3	6	0	7	0	1	8	0	28	0	0
$3\frac{1}{4}$	3	$9\frac{1}{2}$	0	7	7	1	10	4	30	6	8
$3\frac{1}{2}$	4	1	0	8	2	1	12	8	32	13	4
$3\frac{3}{4}$	4	$4\frac{1}{2}$	0	8	9	1	15	0	35	0	0
4	4	8	0	9	4	1	17	4	37	6	8
$4\frac{1}{4}$	4	$11\frac{1}{2}$	0	9	11	1	19	8	39	13	4
$4\frac{1}{2}$	5	3	0	10	6	2	2	0	42	0	0
$4\frac{3}{4}$	5	$6\frac{1}{2}$	0	11	1	2	4	4	44	6	8
5	5	10	0	11	8	2	6	8	46	13	4
$5\frac{1}{4}$	6	$1\frac{1}{2}$	0	12	3	2	9	0	49	0	0
$5\frac{1}{2}$	6	5	0	12	10	2	11	4	51	6	8
$5\frac{3}{4}$	6	$8\frac{1}{2}$	0	13	5	2	13	8	53	13	4
6	7	0	0	14	0	2	16	0	56	0	0
$6\frac{1}{4}$	7	$3\frac{1}{2}$	0	14	7	2	18	4	58	6	8
$6\frac{1}{2}$	7	7	0	15	2	3	0	8	60	13	4
$6\frac{3}{4}$	7	$10\frac{1}{2}$	0	15	9	3	3	0	63	0	0
7	8	2	0	16	4	3	5	4	65	6	8
$7\frac{1}{4}$	8	$5\frac{1}{2}$	0	16	11	3	7	8	67	13	4
$7\frac{1}{2}$	8	9	0	17	6	3	10	0	70	0	0
$7\frac{3}{4}$	9	$0\frac{1}{2}$	0	18	1	3	12	4	72	6	8
8	9	4	0	18	8	3	14	8	74	13	4
$8\frac{1}{4}$	9	$7\frac{1}{2}$	0	19	3	3	17	0	77	0	0
$8\frac{1}{2}$	9	11	0	19	10	3	19	4	79	6	8
$8\frac{3}{4}$	10	$2\frac{1}{2}$	1	0	5	4	1	8	81	13	4
9	10	6	1	1	0	4	4	0	84	0	0
$9\frac{1}{4}$	10	$9\frac{1}{2}$	1	1	7	4	6	4	86	6	8
$9\frac{1}{2}$	11	1	1	2	2	4	8	8	88	13	4
$9\frac{3}{4}$	11	$4\frac{1}{2}$	1	2	9	4	11	0	91	0	0
10	11	8	1	3	4	4	13	4	93	6	8
$10\frac{1}{4}$	11	$11\frac{1}{2}$	1	3	11	4	15	8	95	13	4
$10\frac{1}{2}$	12	3	1	4	6	4	18	0	98	0	0
$10\frac{3}{4}$	12	$6\frac{1}{2}$	1	5	1	5	0	4	100	6	8
11	12	10	1	5	8	5	2	8	102	13	4
$11\frac{1}{4}$	13	$1\frac{1}{2}$	1	6	3	5	5	0	105	0	0
$11\frac{1}{2}$	13	5	1	6	10	5	7	4	107	6	8
$11\frac{3}{4}$	13	$8\frac{1}{2}$	1	7	5	5	9	8	109	13	4
12	14	0	1	8	0	5	12	0	112	0	0

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